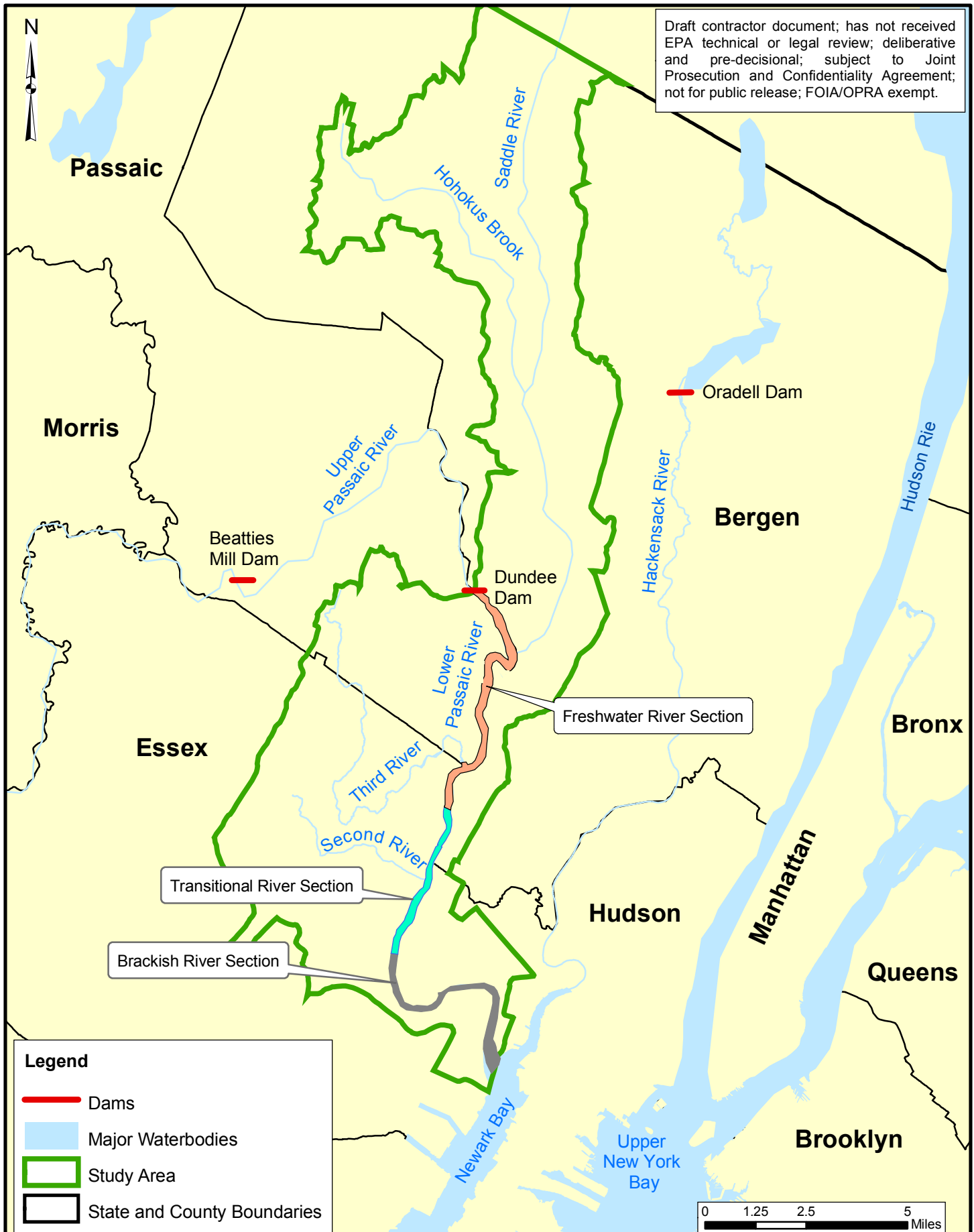


Draft contractor document; has not received EPA technical or legal review; deliberative and pre-decisional; subject to Joint Prosecution and Confidentiality Agreement; not for public release; FOIA/OPRA exempt.



### Legend

- Dams
- Major Waterbodies
- Study Area
- State and County Boundaries



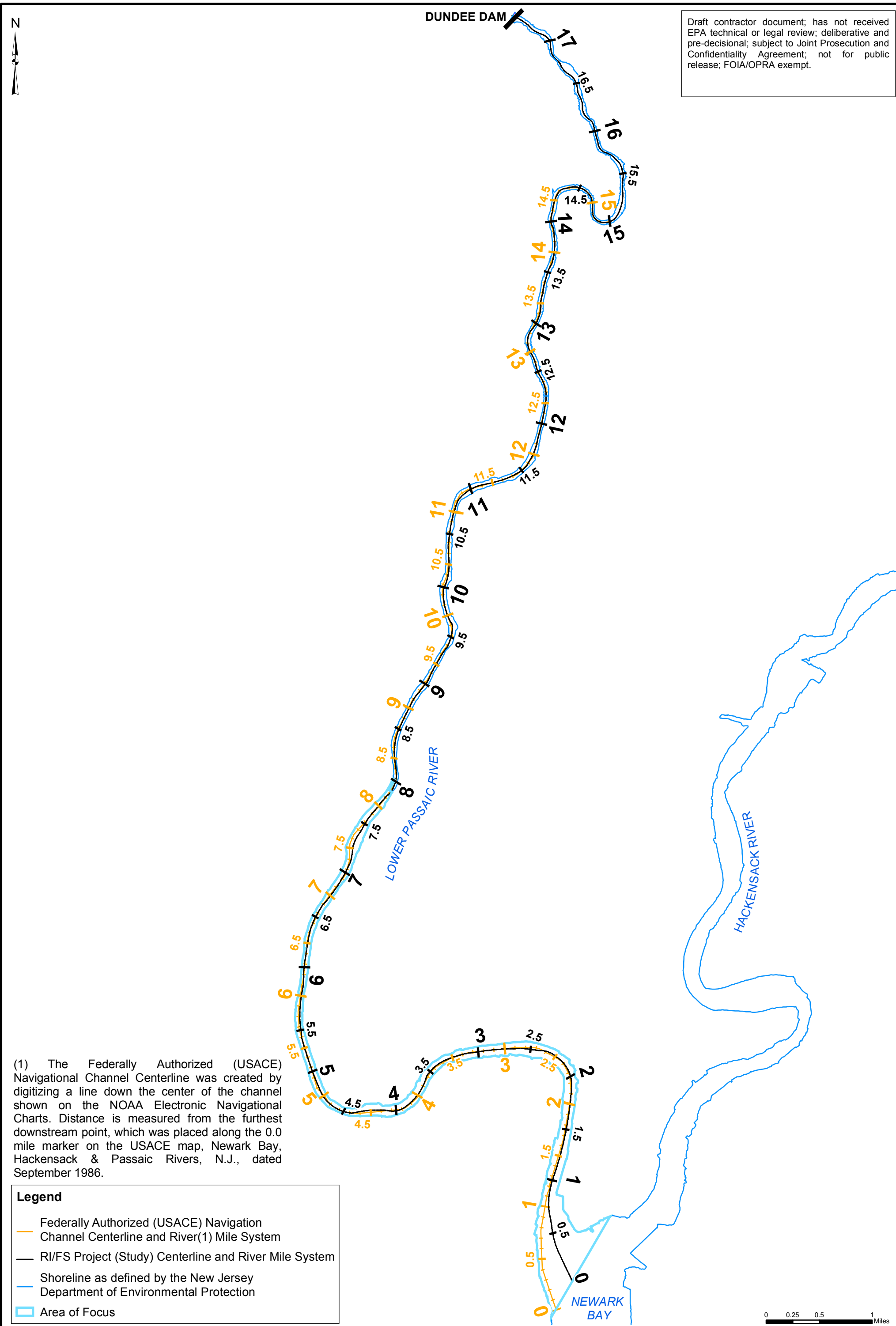
## Study Area Location Map

Lower Passaic River Restoration Project

Figure 2-1

August 2007  
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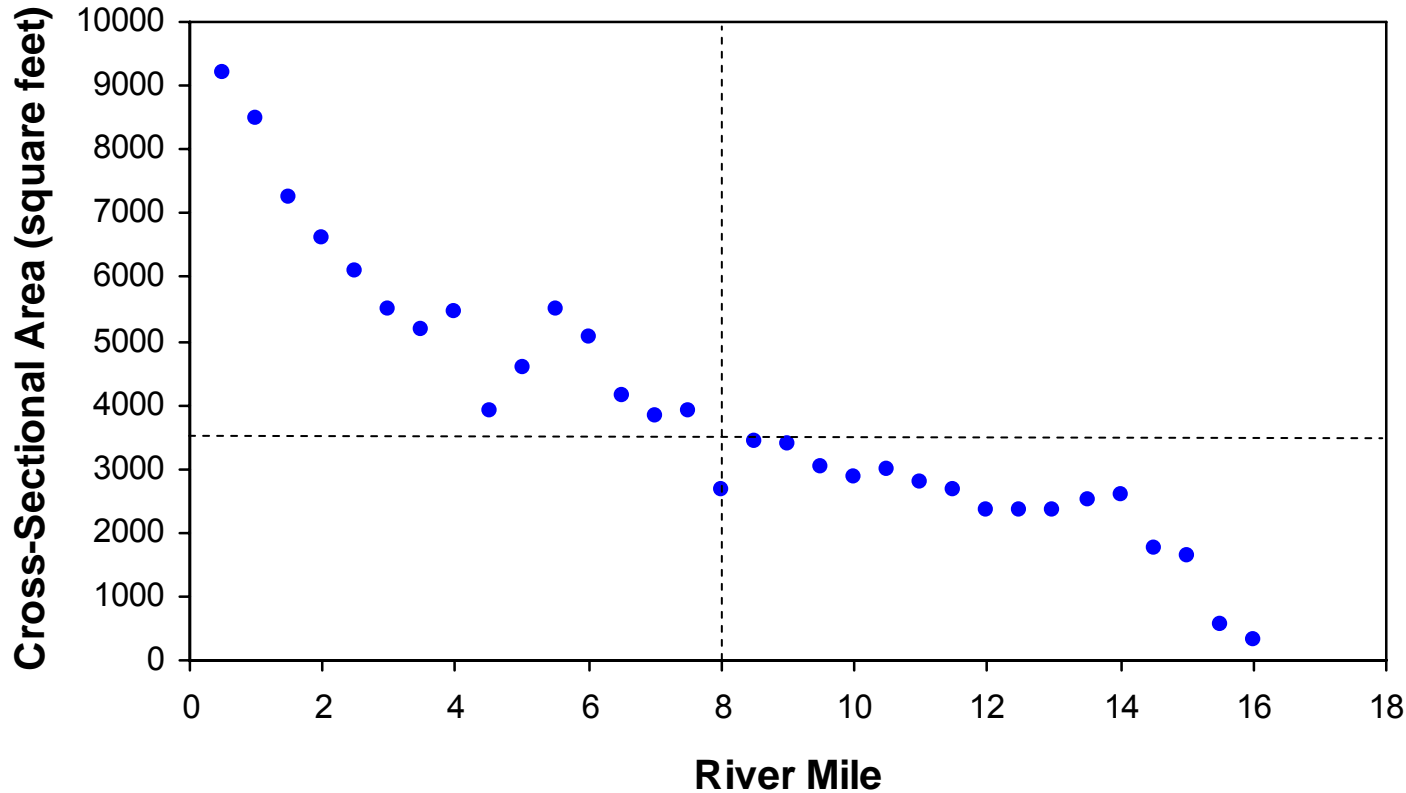


**Comparison of River Mile Systems**  
*Lower Passaic River Restoration Project*

**FIGURE 2-2**

**August 2007  
Draft**





## Legend

- Cross-Sectional Area (square feet)

----- Highlights the change to a river cross sectional area of 3,500 square feet at RM8 <sup>(1)</sup>

## Notes

Cross-sectional area estimated from 2004 bathymetric data surveyed by Rogers Survey, Inc. for USACE.

Cross-sectional area refers to the water filled area of the river channel when water level is equal to 0 feet elevation at NGVD29.

(1) RI/FS river mile system is used.

*Draft contractor document; has not received EPA technical or legal review; deliberative and pre-decisional; subject to Joint Prosecution and Confidentiality Agreement; not for public release; FOIA/OPRA exempt.*



## Variation of Lower Passaic River Cross-Sectional Area with River Mile

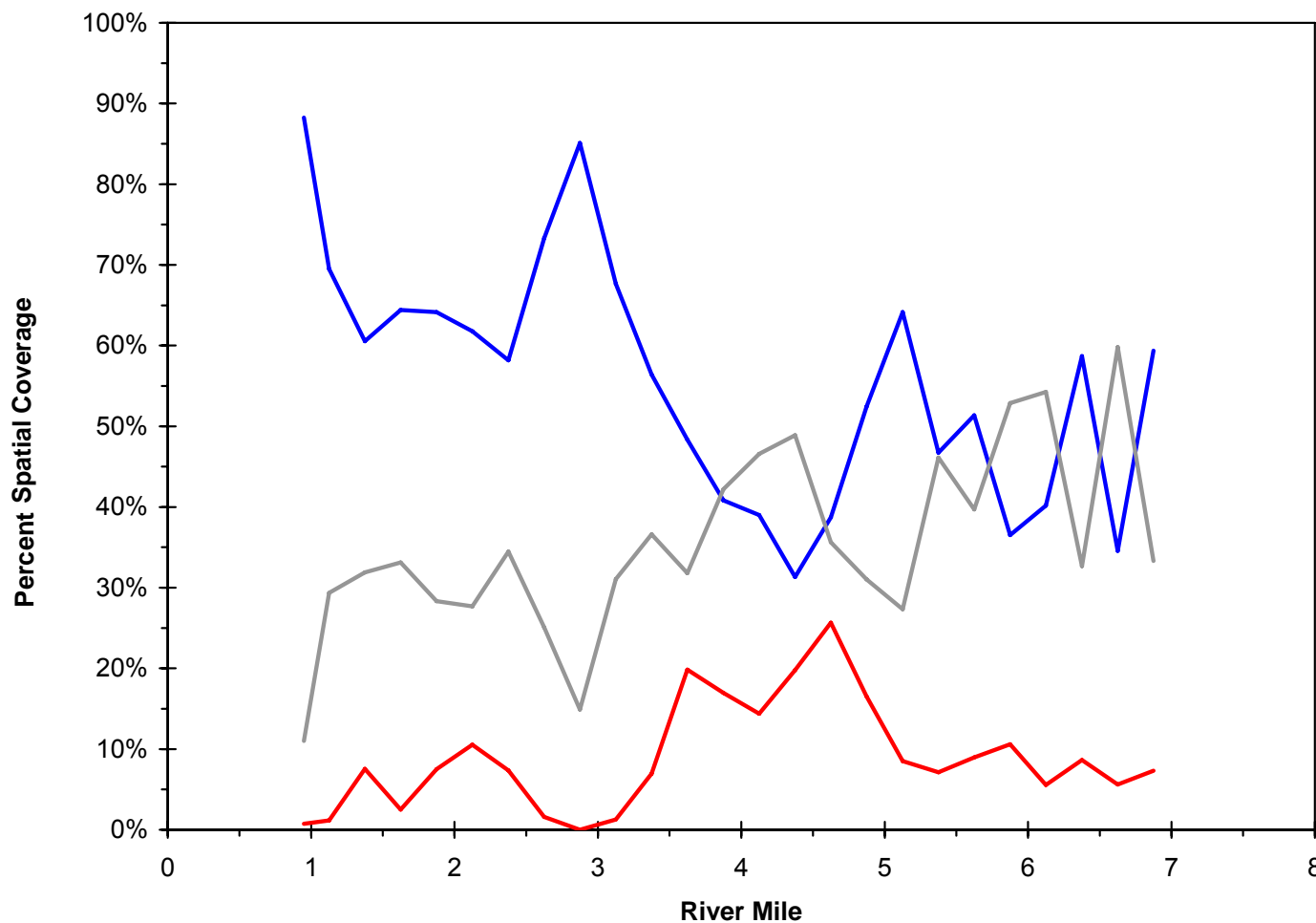
*Lower Passaic River Restoration Project*

Figure 2-3

August 2007  
Draft

**MALCOLM  
PIRNIE**

INDEPENDENT ENVIRONMENTAL  
ENGINEERS, SCIENTISTS  
AND CONSULTANTS



## Legend

- Consistently and Occasionally Erosional
- Consistently and Occasionally Depositional
- Bathymetrically Neutral Area

## Notes

Refer to Appendix A "Conceptual Site Model" for more detail on net erosional, net depositional, and bathymetrically neutral areas.

RI/FS river mile system is used.

*Draft contractor document; has not received EPA technical or legal review; deliberative and pre-decisional; subject to Joint Prosecution and Confidentiality Agreement; not for public release; FOIA/OPRA exempt.*



Percent Spatial Coverage of Net Erosional, Net Depositional, and Bathymetrically Neutral Areas

*Lower Passaic River Restoration Project*

Figure 2-4

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Draft contractor document; has not received EPA technical or legal review; deliberative and pre-decisional; subject to Joint Prosecution and Confidentiality Agreement; not for public release; FOIA/OPRA exempt.



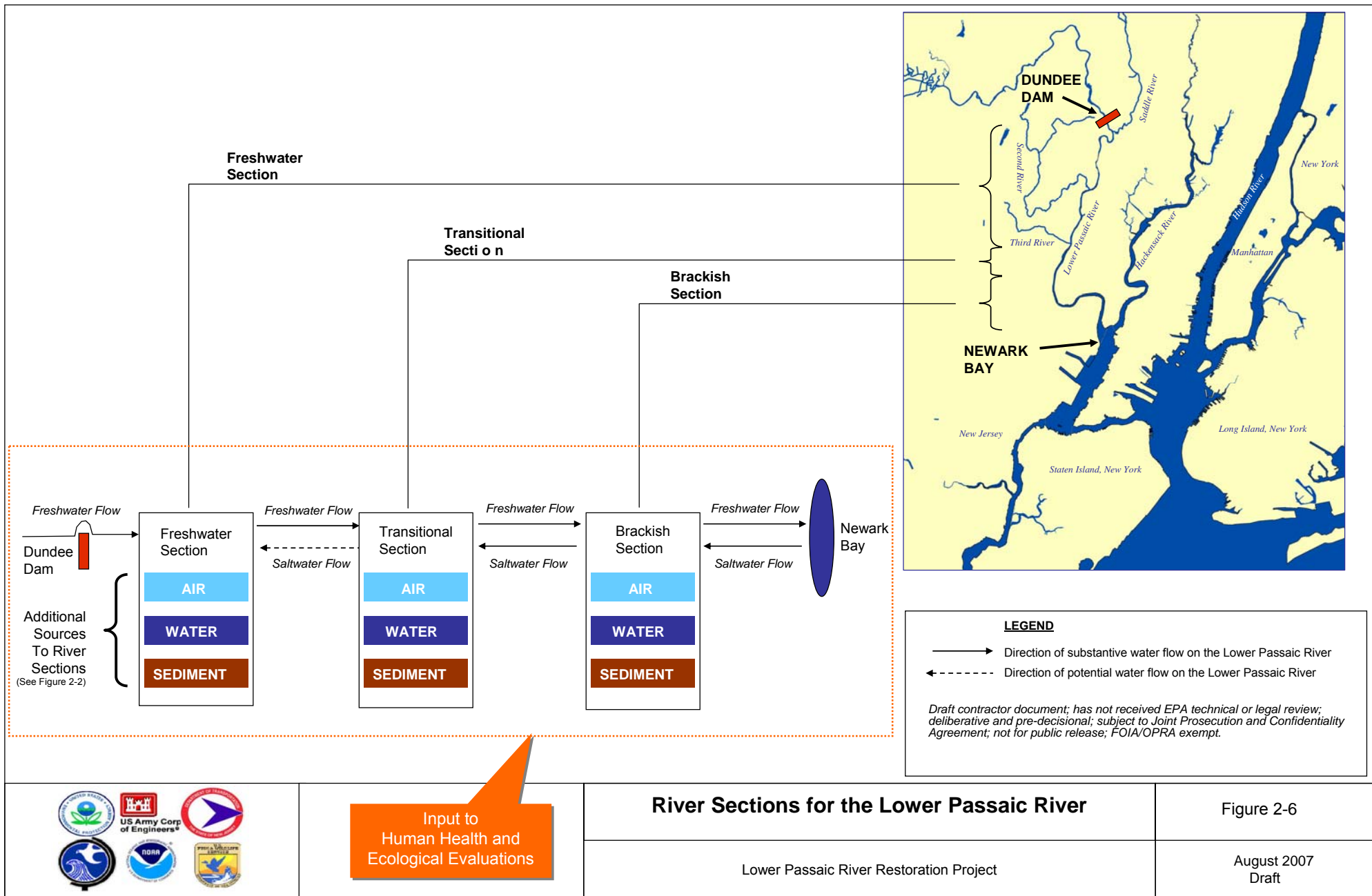
S:\Projects\PASSAIC\MapDocuments\4553001-CERCLA\Figure2-1.mxd - 2/2/2007 @ 6:05:09 PM

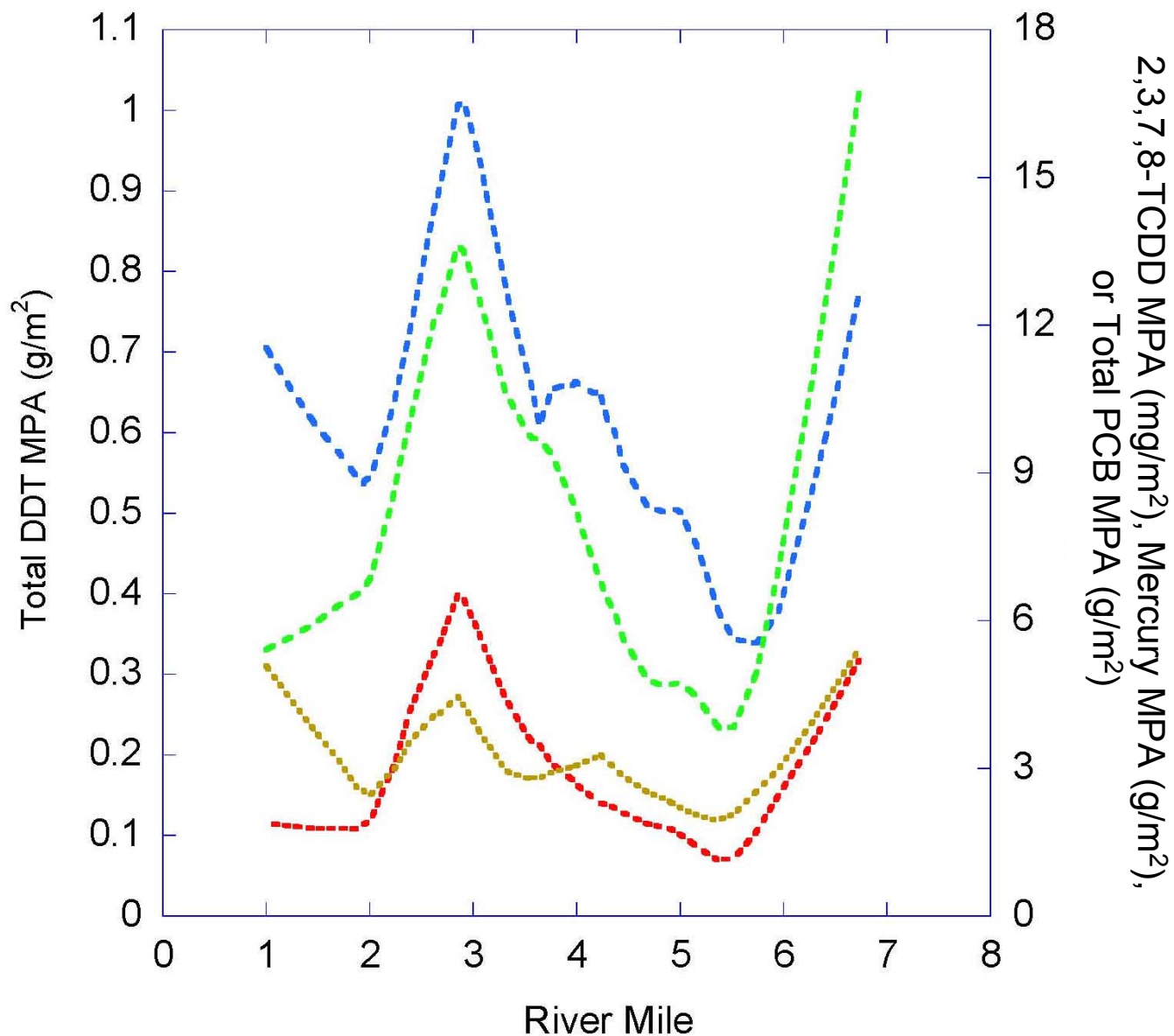


# Hudson-Raritan Estuary Lower Passaic River Restoration Project

Figure 2-5

August 2007





## Legend

- Mercury MPA (g/m²)
- 2,3,7,8-TCDD MPA (mg/m²)
- Total PCB MPA (g/m²)
- Total DDT MPA (g/m²)

## Notes

MPA is mass per unit area.

RI/FS river mile system is used.

*Draft contractor document; has not received EPA technical or legal review; deliberative and pre-decisional; subject to Joint Prosecution and Confidentiality Agreement; not for public release; FOIA/OPRA exempt.*



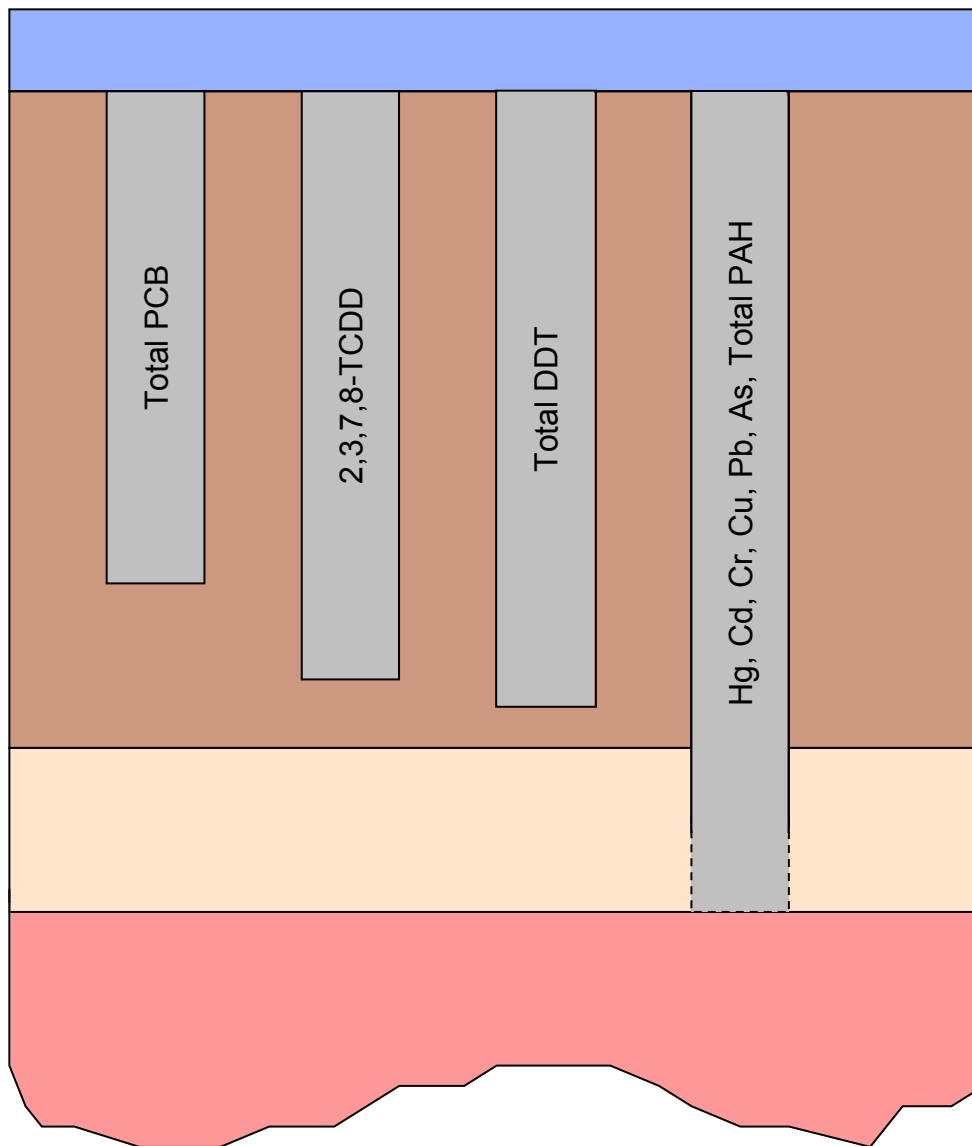
Weighted Curve Sediment Inventory vs. River Mile

Lower Passaic River Restoration Project






Figure 2-7

August 2007  
Draft

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PIRNIE**  
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AND CONSULTANTS



## Legend

-  Schematic of Sediment Core
-  Water
-  Fine-Grained Sediment
-  Sand
-  Clay

## Notes

Hg = Mercury  
 Cd = Cadmium  
 Cr = Chromium  
 Pb = Lead  
 As = Arsenic

*Draft contractor document;  
 has not received EPA  
 technical or legal review;  
 deliberative and pre-  
 decisional; subject to Joint  
 Prosecution and  
 Confidentiality Agreement;  
 not for public release;  
 FOIA/OPRA exempt.*



## Schematic of Nature and Extent of Contamination in Sediment Beds

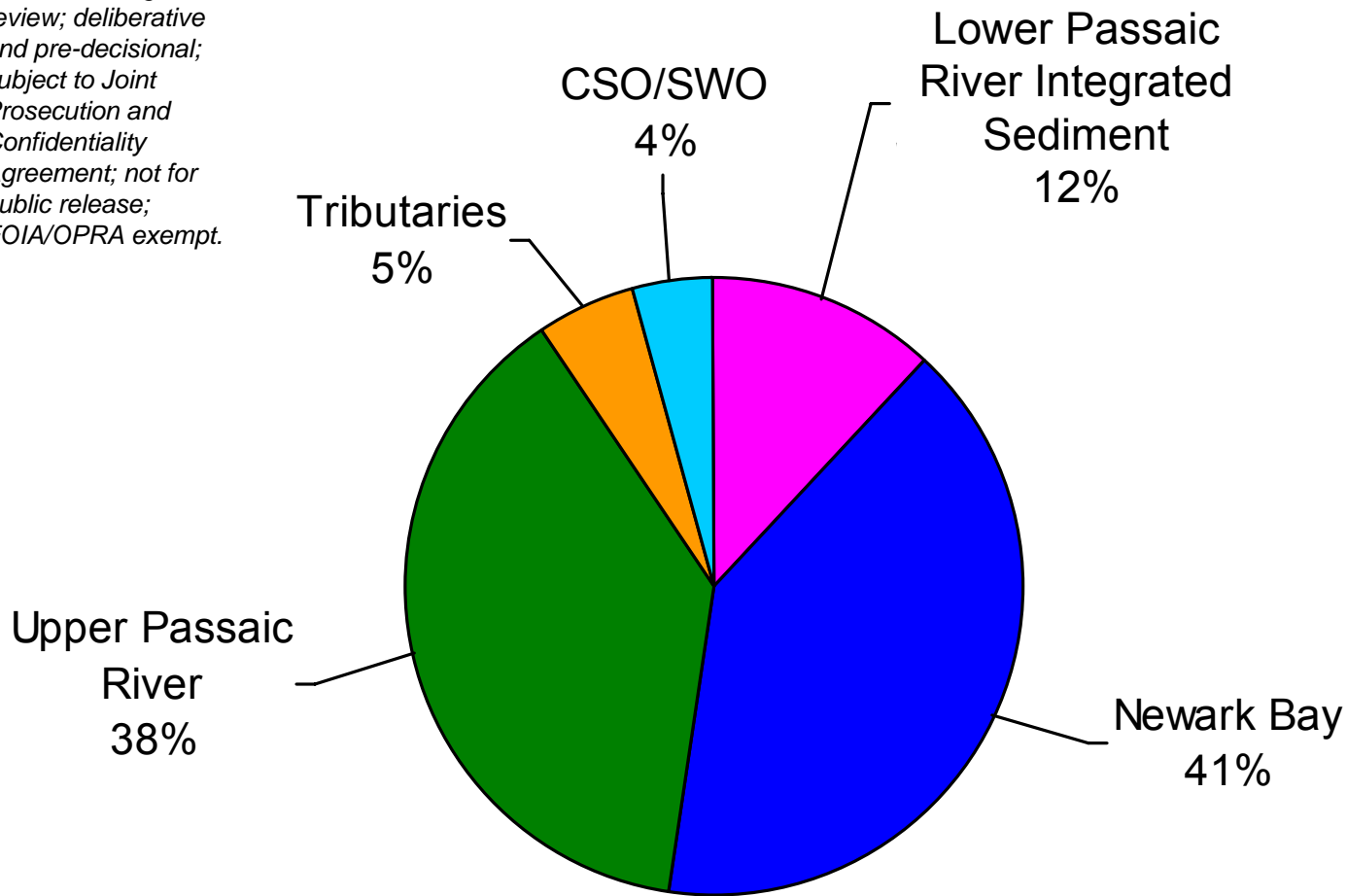
*Lower Passaic River Restoration Project*

Figure 2-8

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 ENGINEERS, SCIENTISTS  
 AND CONSULTANTS

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## Legend

- Lower Passaic River Integrated Sediment
- Newark Bay
- Upper Passaic River
- Tributaries
- CSO/SWO

## Notes

“Upper Passaic River” is the core top from Dundee Lake at RM18.3.

“Tributaries” is a watershed-weighted average of Saddle River, Second River, and Third River.

“Newark Bay” represents the average of the five southern samples only.

“Lower Passaic River Integrated Sediment” is the average of high resolution cores.

Averages were calculated using all available data.



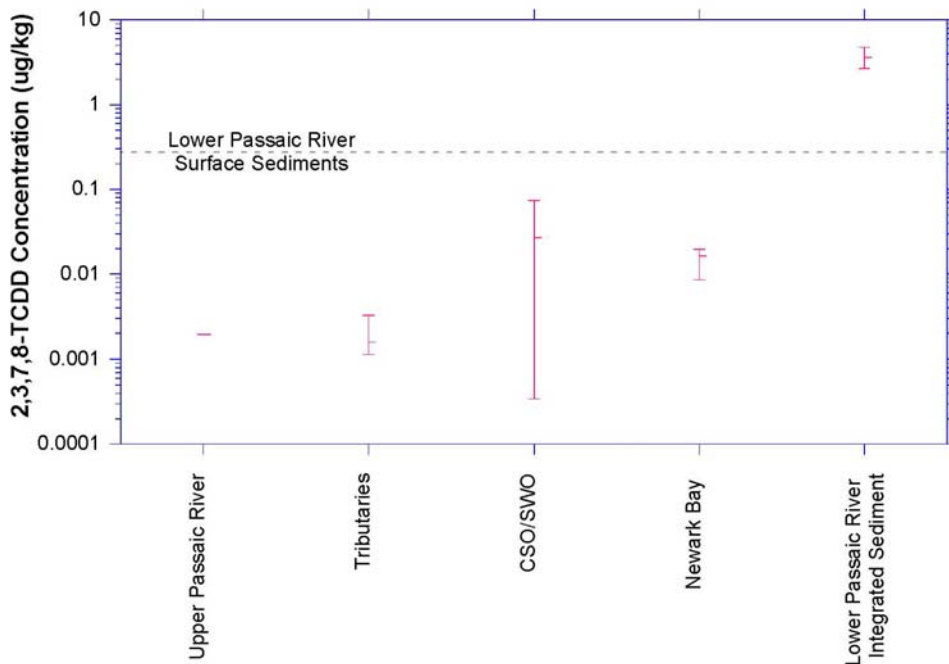
Solids Contribution for the Length-Weighted Average Scenario

Lower Passaic River Restoration Project

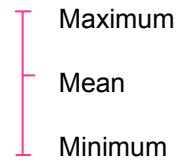
Figure 2-9

August 2007

## Solids Contribution for 2,3,7,8-TCDD



### Legend

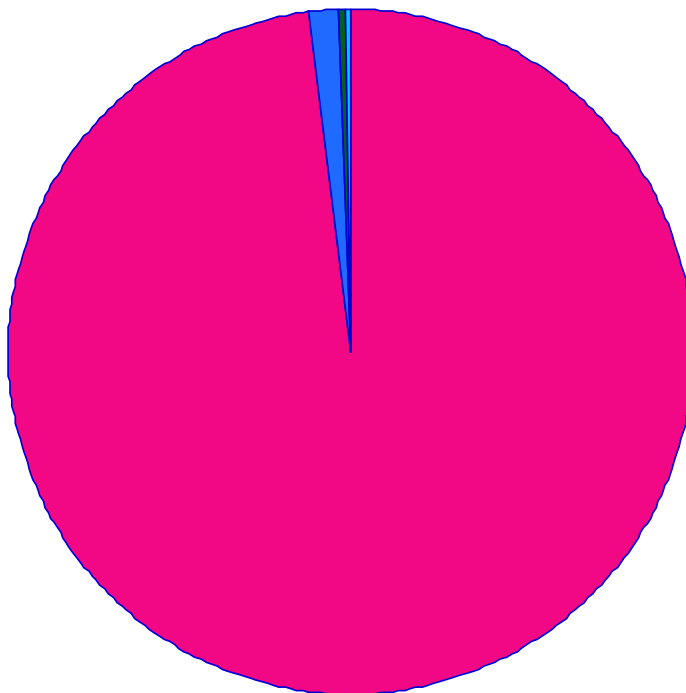


### Notes

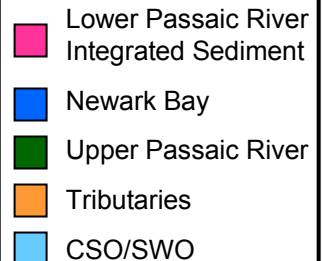
See below.

*Draft contractor document; has not received EPA technical or legal review; deliberative and pre-decisional; subject to Joint Prosecution and Confidentiality Agreement; not for public release; FOIA/OPRA exempt.*

## 2,3,7,8-TCDD Mass Balance



### Legend



### Notes

"Upper Passaic River" is the core top from Dundee Lake at RM18.3.

"Tributaries" is a watershed-weighted average of Saddle River, Second River, and Third River.

"Newark Bay" represents the average of the five southern samples only.

"Lower Passaic River Integrated Sediment" is the average of high resolution cores.

Averages were calculated using all available data.

## Solids Contribution and Mass Balance for 2,3,7,8-TCDD

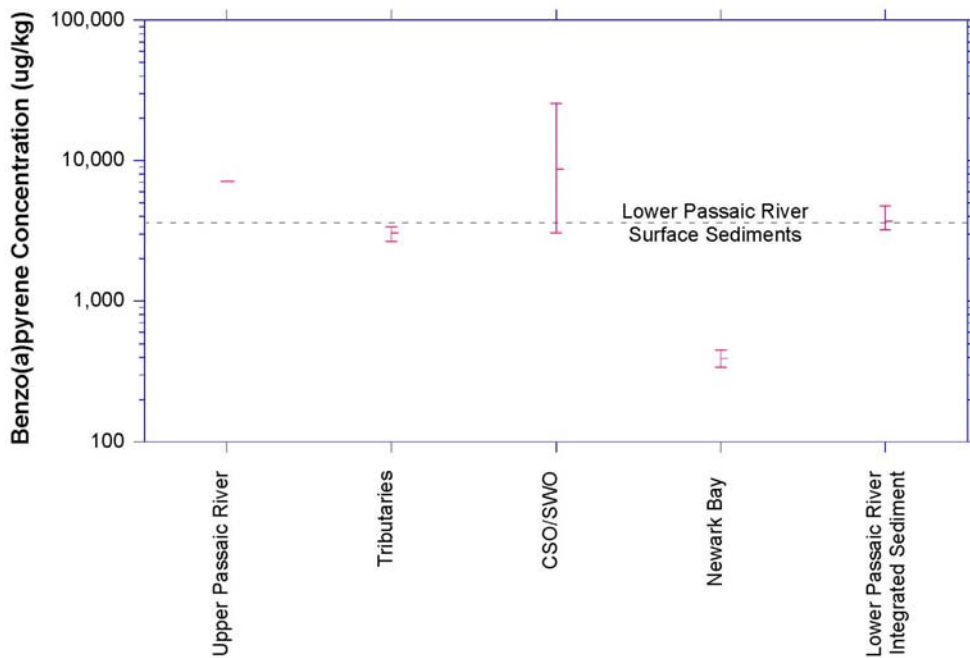
Lower Passaic River Restoration Project

Figure 2-10

August 2007



## Solids Contribution for Benzo(a)pyrene



## Legend

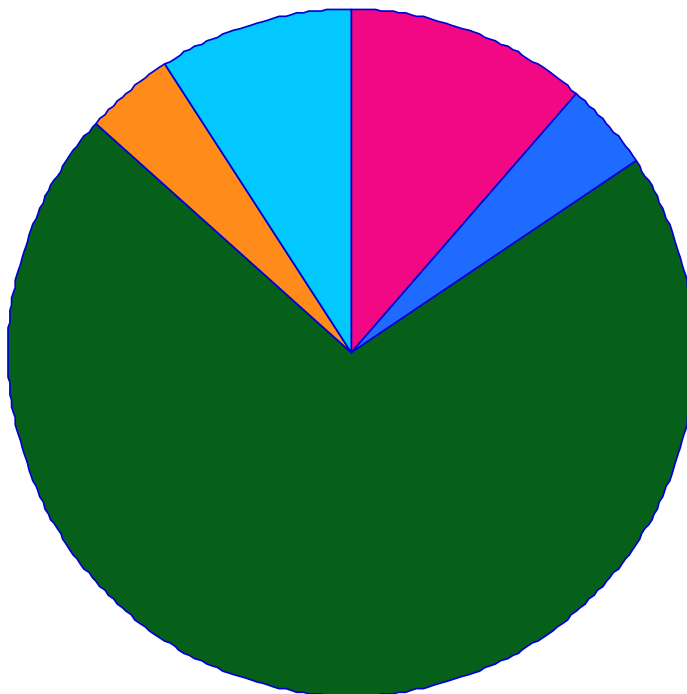
Maximum  
Mean  
Minimum

## Notes

See below.

*Draft contractor document; has not received EPA technical or legal review; deliberative and pre-decisional; subject to Joint Prosecution and Confidentiality Agreement; not for public release; FOIA/OPRA exempt.*

## Benzo(a)pyrene Mass Balance



## Legend

Lower Passaic River Integrated Sediment  
Newark Bay  
Upper Passaic River  
Tributaries  
CSO/SWO

## Notes

"Upper Passaic River" is the core top from Dundee Lake at RM18.3.

"Tributaries" is a watershed-weighted average of Saddle River, Second River, and Third River.

"Newark Bay" represents the average of the five southern samples only.

"Lower Passaic River Integrated Sediment" is the average of high resolution cores.

Averages were calculated using all available data.

## Solids Contribution and Mass Balance for Benzo(a)pyrene

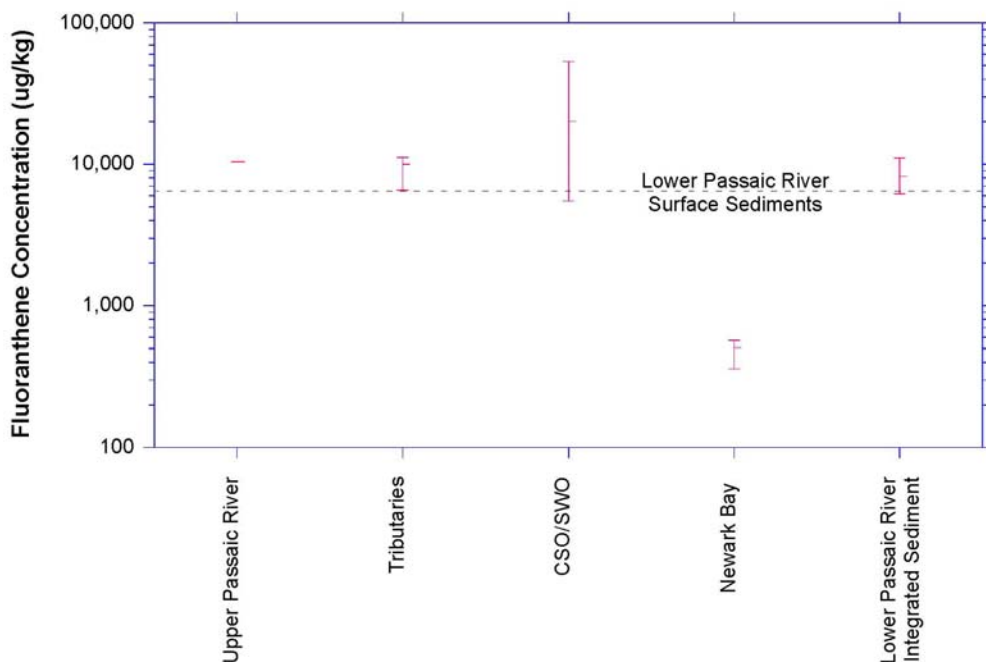
Lower Passaic River Restoration Project

Figure 2-11

August 2007



## Solids Contribution for Fluoranthene



## Legend

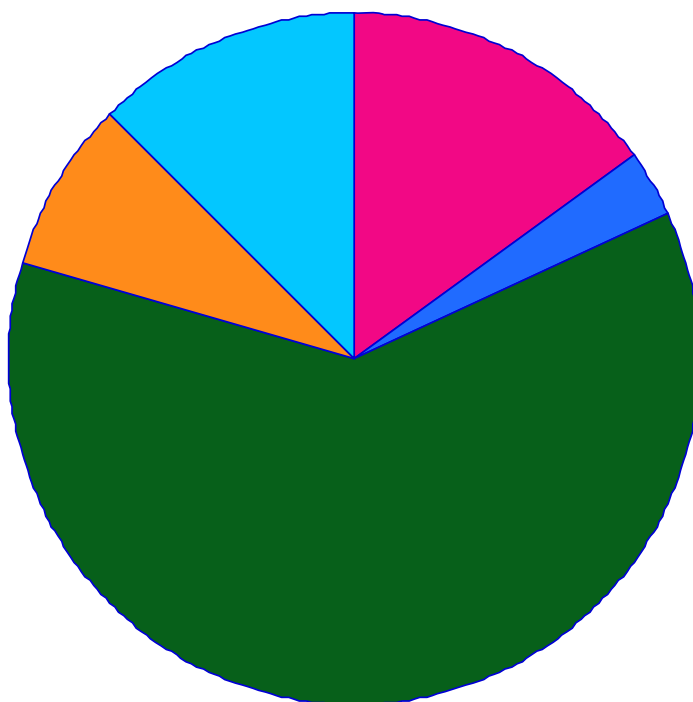
Maximum  
Mean  
Minimum

## Notes

See below.

*Draft contractor document; has not received EPA technical or legal review; deliberative and pre-decisional; subject to Joint Prosecution and Confidentiality Agreement; not for public release; FOIA/OPRA exempt.*

## Fluoranthene Mass Balance



## Legend

Lower Passaic River Integrated Sediment  
Newark Bay  
Upper Passaic River  
Tributaries  
CSO/SWO

## Notes

"Upper Passaic River" is the core top from Dundee Lake at RM18.3.

"Tributaries" is a watershed-weighted average of Saddle River, Second River, and Third River.

"Newark Bay" represents the average of the five southern samples only.

"Lower Passaic River Integrated Sediment" is the average of high resolution cores.

Averages were calculated using all available data.

## Solids Contribution and Mass Balance for Fluoranthene

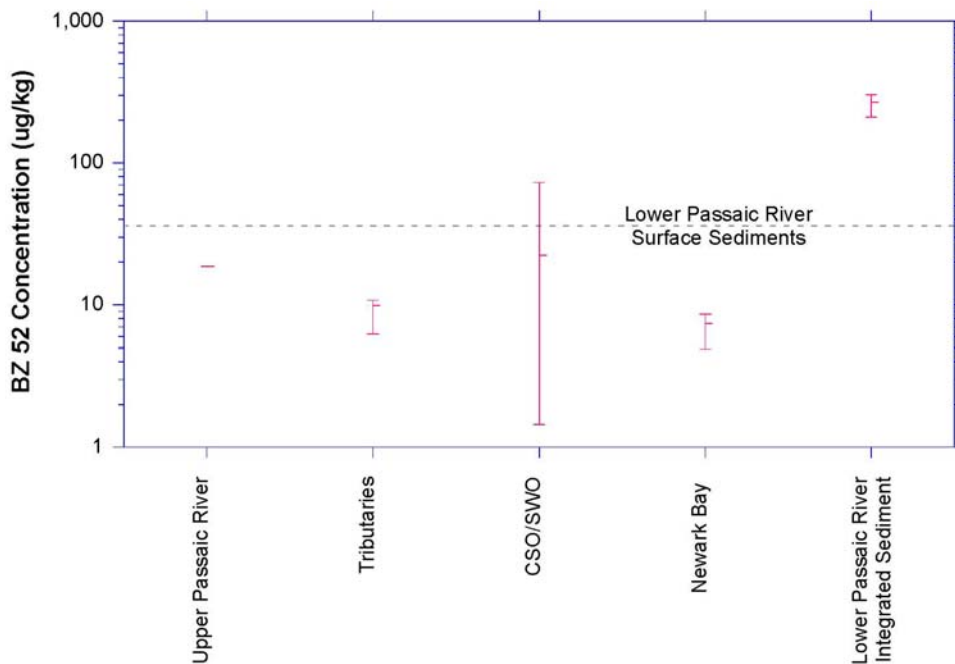
Lower Passaic River Restoration Project

Figure 2-12

August 2007



## Solids Contribution for BZ 52



## Legend

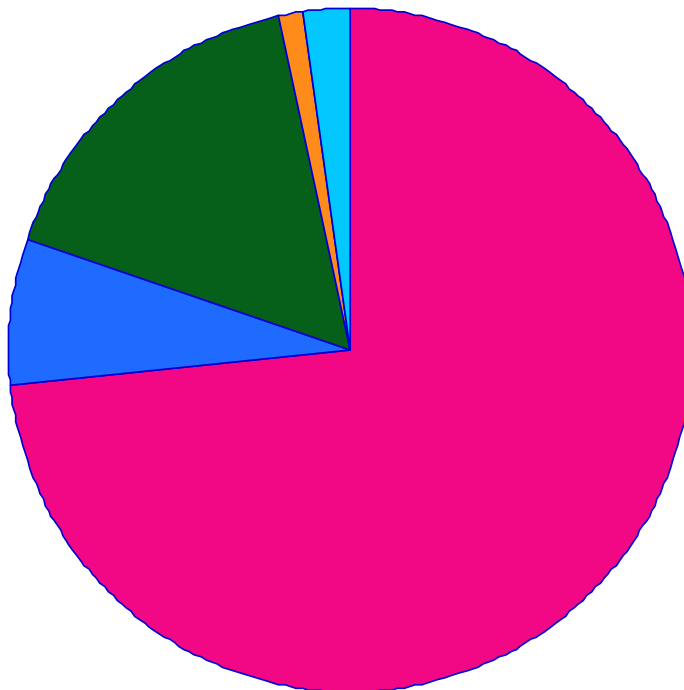
Maximum  
 Mean  
 Minimum

## Notes

See below.

*Draft contractor document; has not received EPA technical or legal review; deliberative and pre-decisional; subject to Joint Prosecution and Confidentiality Agreement; not for public release; FOIA/OPRA exempt.*

## BZ 52 Mass Balance



## Legend

Lower Passaic River Integrated Sediment  
 Newark Bay  
 Upper Passaic River  
 Tributaries  
 CSO/SWO

## Notes

"Upper Passaic River" is the core top from Dundee Lake at RM18.3.

"Tributaries" is a watershed-weighted average of Saddle River, Second River, and Third River.

"Newark Bay" represents the average of the five southern samples only.

"Lower Passaic River Integrated Sediment" is the average of high resolution cores.

Averages were calculated using all available data.

## Solids Contribution and Mass Balance for BZ 52

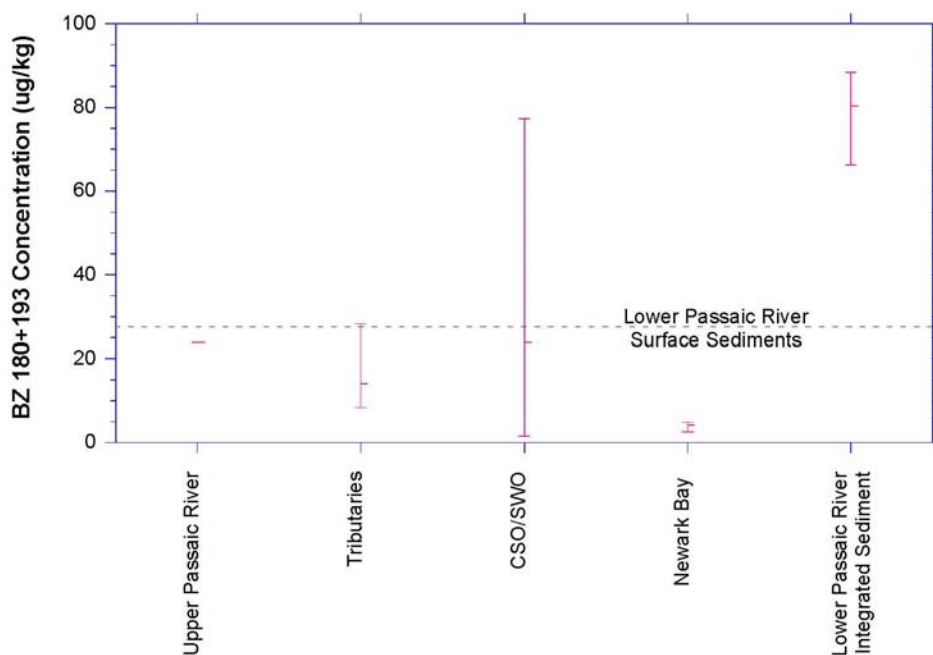
Lower Passaic River Restoration Project

Figure 2-13

August 2007



## Solids Contribution for BZ 180+193



## Legend

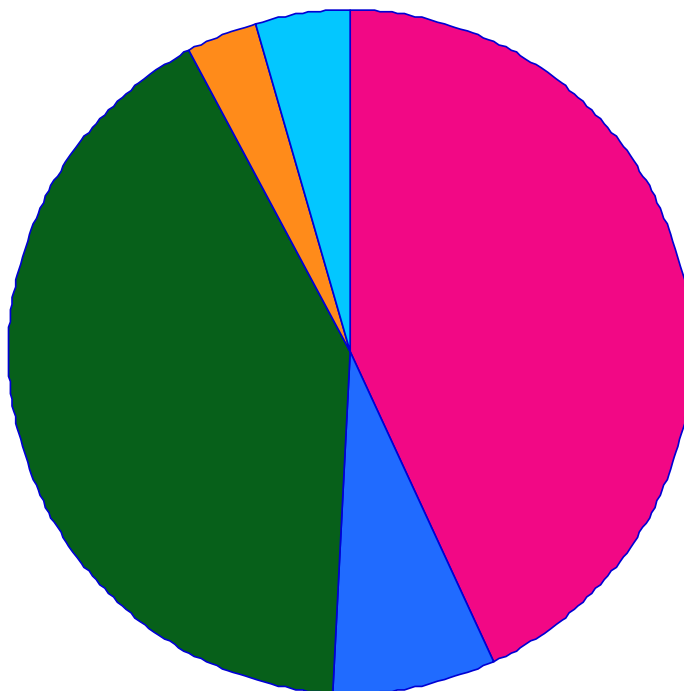
Maximum  
Mean  
Minimum

## Notes

See below.

*Draft contractor document; has not received EPA technical or legal review; deliberative and pre-decisional; subject to Joint Prosecution and Confidentiality Agreement; not for public release; FOIA/OPRA exempt.*

## BZ 180+193 Mass Balance



## Legend

Lower Passaic River Integrated Sediment  
Newark Bay  
Upper Passaic River  
Tributaries  
CSO/SWO

## Notes

"Upper Passaic River" is the core top from Dundee Lake at RM18.3.

"Tributaries" is a watershed-weighted average of Saddle River, Second River, and Third River.

"Newark Bay" represents the average of the five southern samples only.

"Lower Passaic River Integrated Sediment" is the average of high resolution cores.

Averages were calculated using all available data.

## Solids Contribution and Mass Balance for BZ 180+193

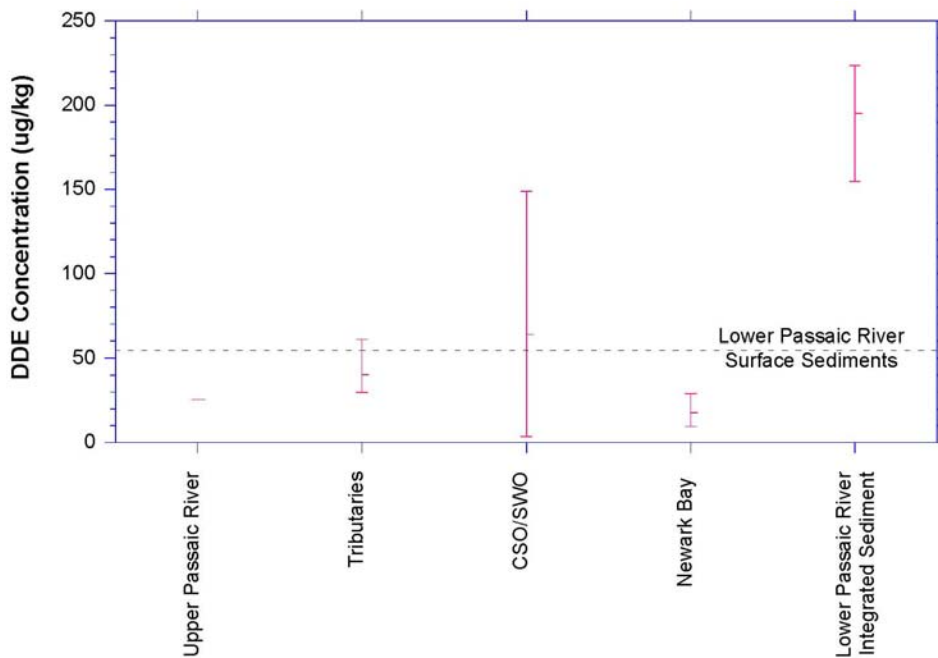
Lower Passaic River Restoration Project

Figure 2-14

August 2007



## Solids Contribution for DDE



## Legend

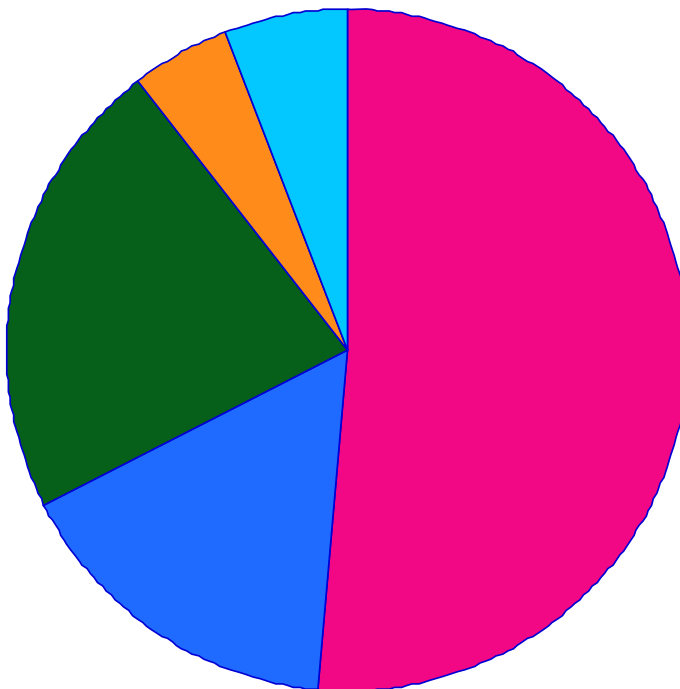
Maximum  
Mean  
Minimum

## Notes

See below.

*Draft contractor document; has not received EPA technical or legal review; deliberative and pre-decisional; subject to Joint Prosecution and Confidentiality Agreement; not for public release; FOIA/OPRA exempt.*

## DDE Mass Balance



## Legend

Lower Passaic River Integrated Sediment  
Newark Bay  
Upper Passaic River  
Tributaries  
CSO/SWO

## Notes

DDE represents only the 4,4'-isomer.

"Upper Passaic River" is the core top from Dundee Lake at RM18.3.

"Tributaries" is a watershed-weighted average of Saddle River, Second River, and Third River.

"Newark Bay" represents the average of the five southern samples only.

"Lower Passaic River Integrated Sediment" is the average of high resolution cores.

Averages were calculated using all available data.

## Solids Contribution and Mass Balance for DDE

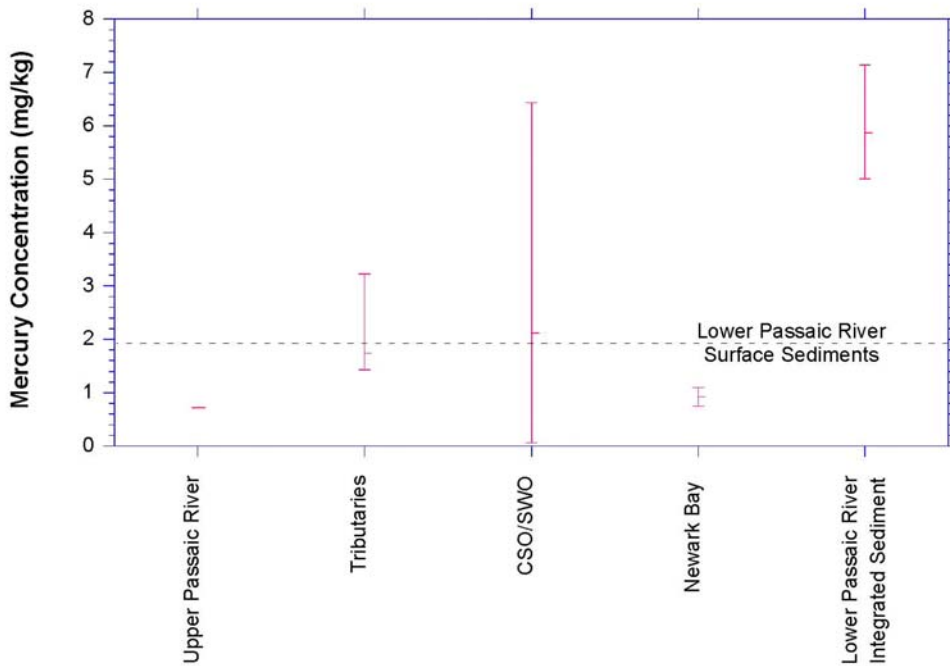
*Lower Passaic River Restoration Project*

Figure 2-15

August 2007



## Solids Contribution for Mercury



## Legend

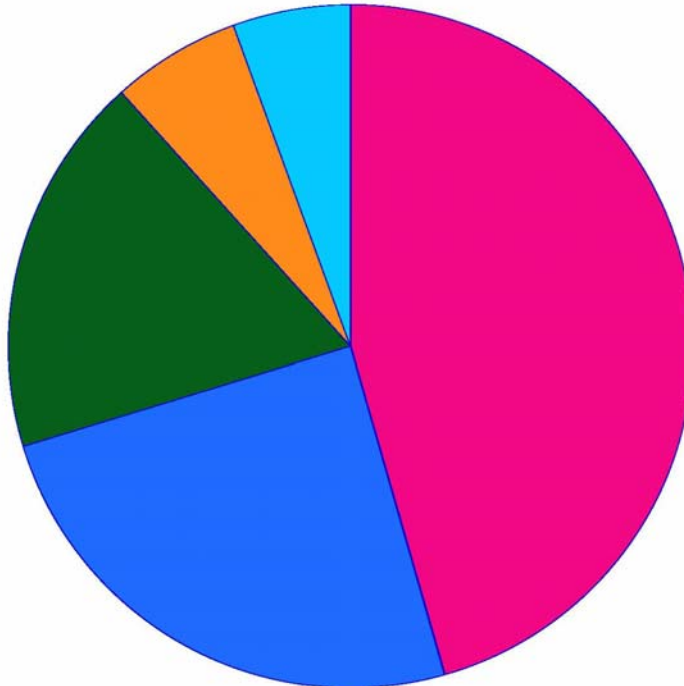
Maximum  
Mean  
Minimum

## Notes

See below.

*Draft contractor document; has not received EPA technical or legal review; deliberative and pre-decisional; subject to Joint Prosecution and Confidentiality Agreement; not for public release; FOIA/OPRA exempt.*

## Mercury Mass Balance



## Legend

Lower Passaic River Integrated Sediment  
Newark Bay  
Upper Passaic River  
Tributaries  
CSO/SWO

## Notes

"Upper Passaic River" is the core top from Dundee Lake at RM18.3.

"Tributaries" is a watershed-weighted average of Saddle River, Second River, and Third River.

"Newark Bay" represents the average of the five southern samples only.

"Lower Passaic River Integrated Sediment" is the average of high resolution cores.

Averages were calculated using all available data.

## Solids Contribution and Mass Balance for Mercury

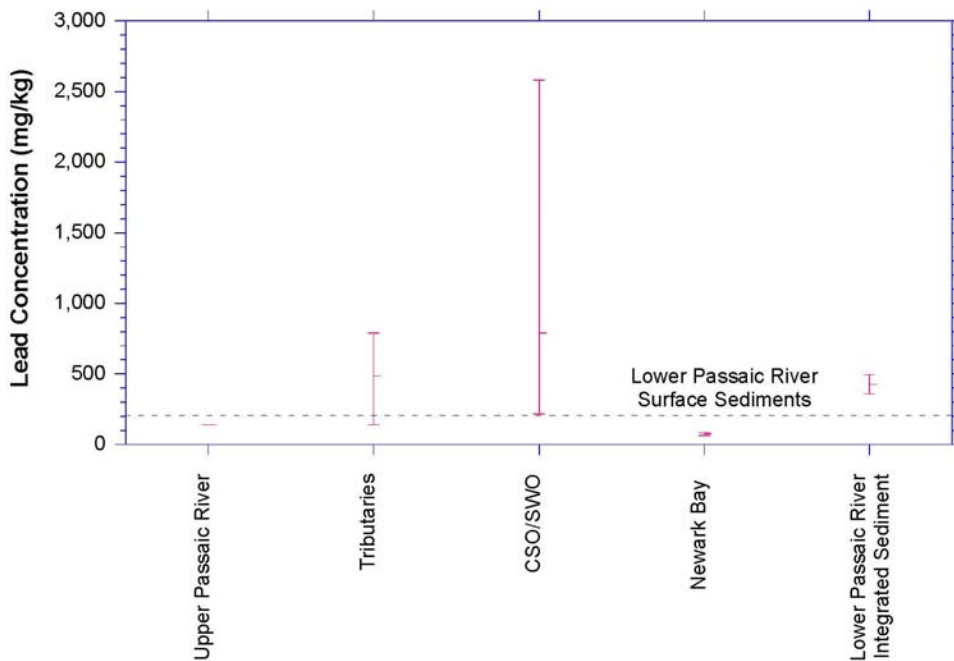
*Lower Passaic River Restoration Project*

Figure 2-16

August 2007



## Solids Contribution for Lead



## Legend

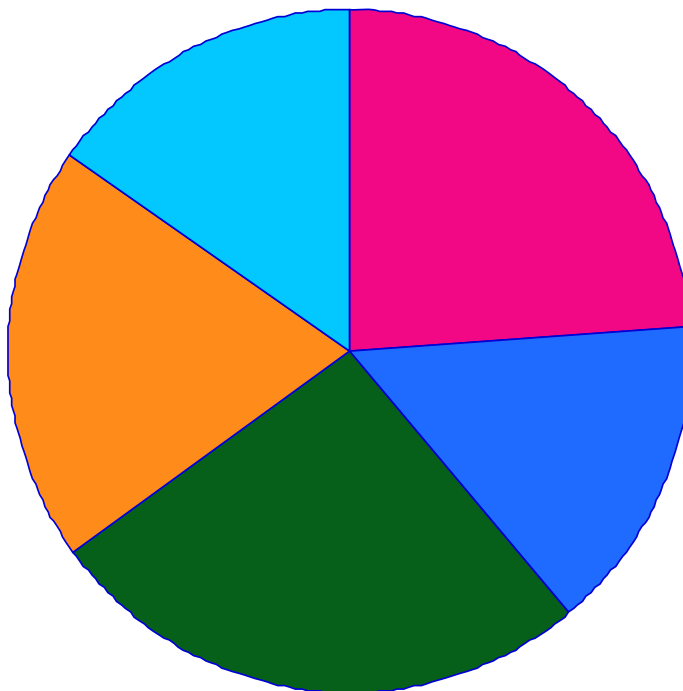
Maximum  
Mean  
Minimum

## Notes

See below.

*Draft contractor document; has not received EPA technical or legal review; deliberative and pre-decisional; subject to Joint Prosecution and Confidentiality Agreement; not for public release; FOIA/OPRA exempt.*

## Lead Mass Balance



## Legend

Lower Passaic River Integrated Sediment  
Newark Bay  
Upper Passaic River  
Tributaries  
CSO/SWO

## Notes

"Upper Passaic River" is the core top from Dundee Lake at RM18.3.

"Tributaries" is a watershed-weighted average of Saddle River, Second River, and Third River.

"Newark Bay" represents the average of the five southern samples only.

"Lower Passaic River Integrated Sediment" is the average of high resolution cores.

Averages were calculated using all available data.

## Solids Contribution and Mass Balance for Lead

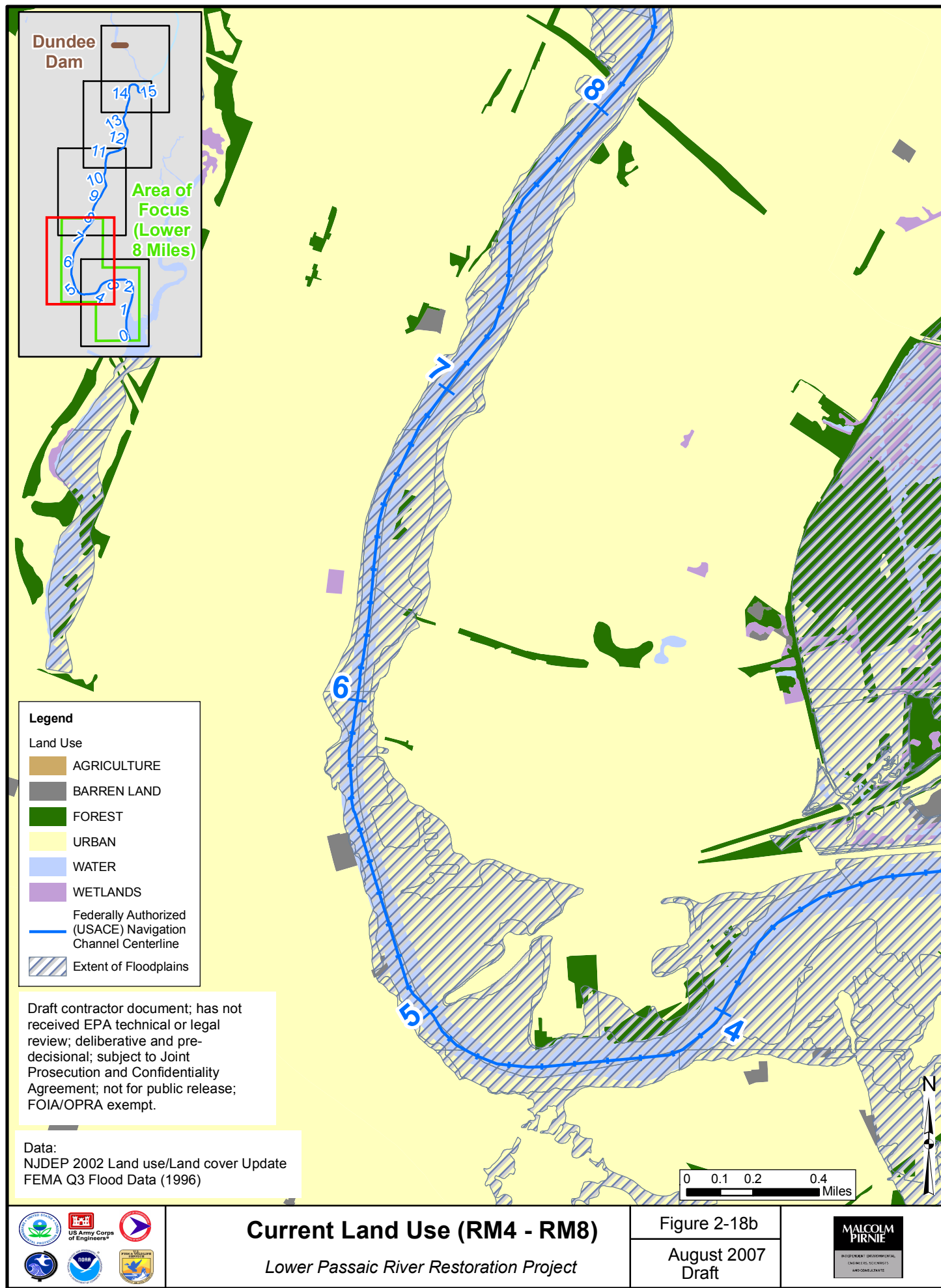
*Lower Passaic River Restoration Project*

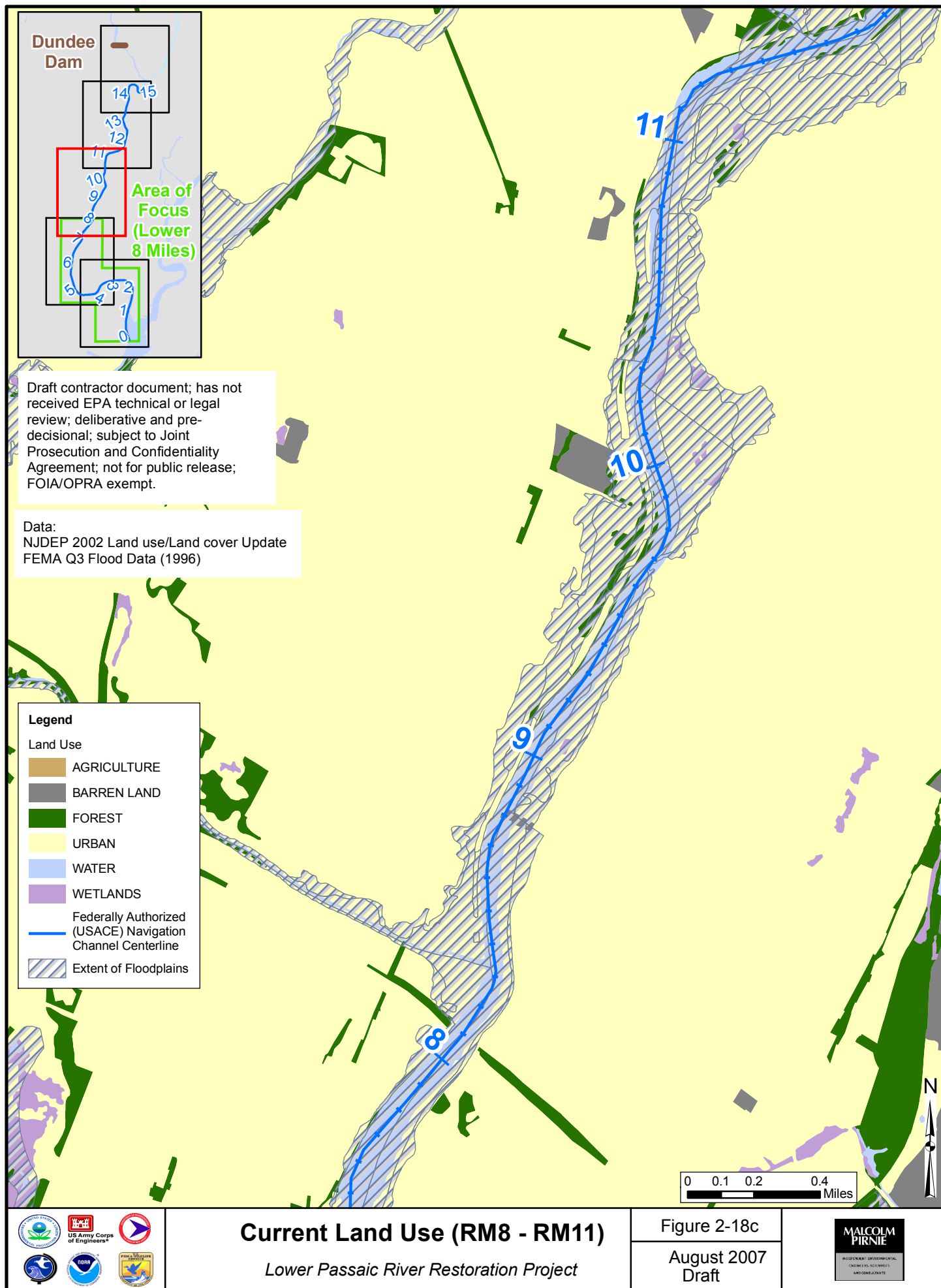
Figure 2-17

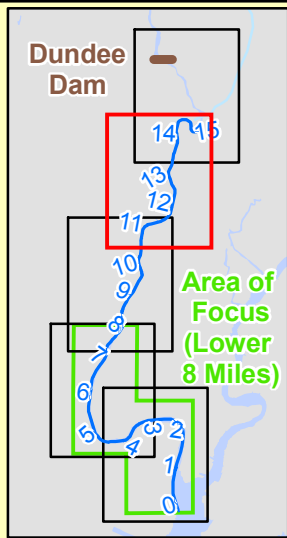
August 2007











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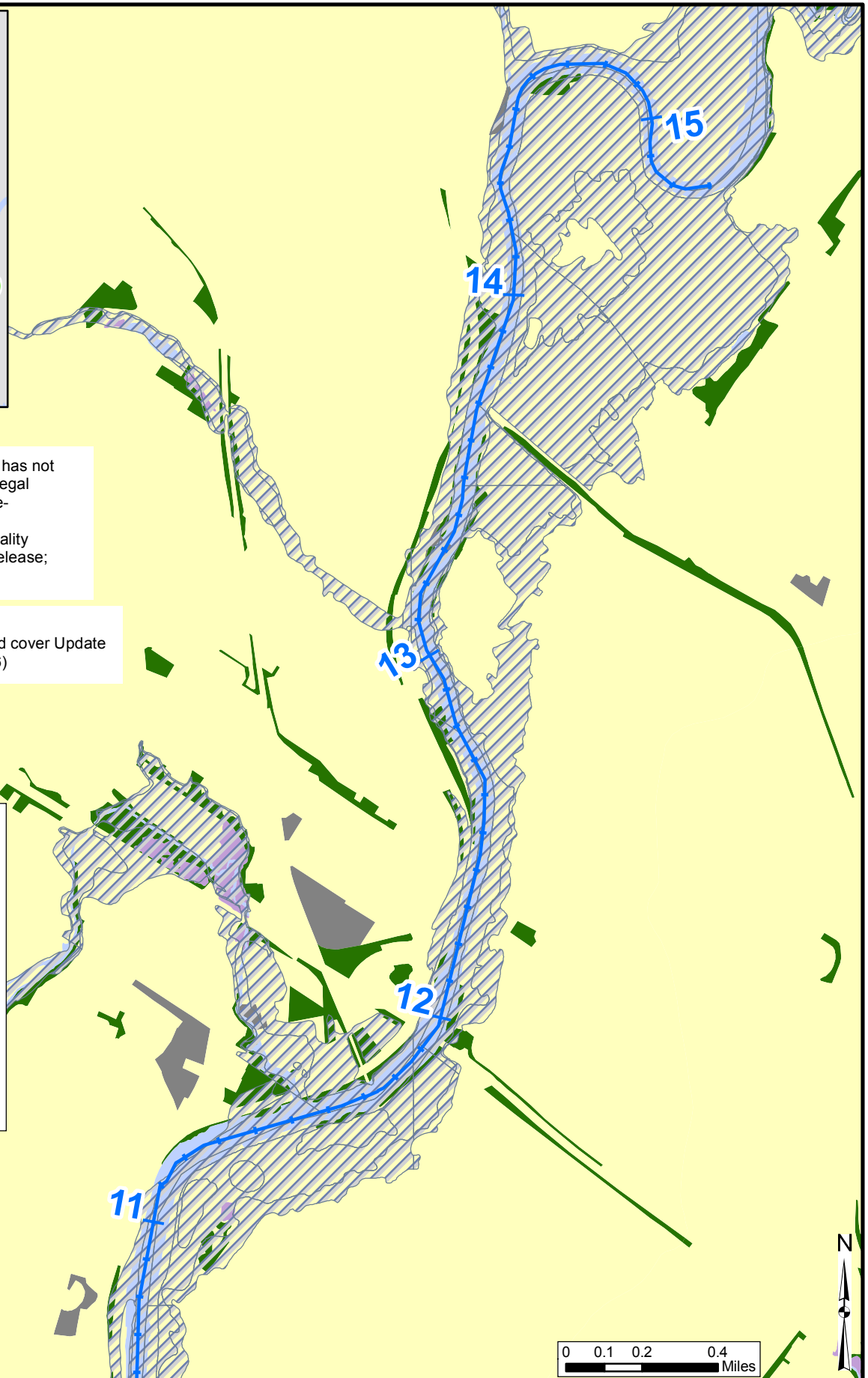
Data:  
NJDEP 2002 Land use/Land cover Update  
FEMA Q3 Flood Data (1996)

#### Legend

##### Land Use

- AGRICULTURE
- BARREN LAND
- FOREST
- URBAN
- WATER
- WETLANDS

- Federally Authorized (USACE) Navigation Channel Centerline
- Extent of Floodplains



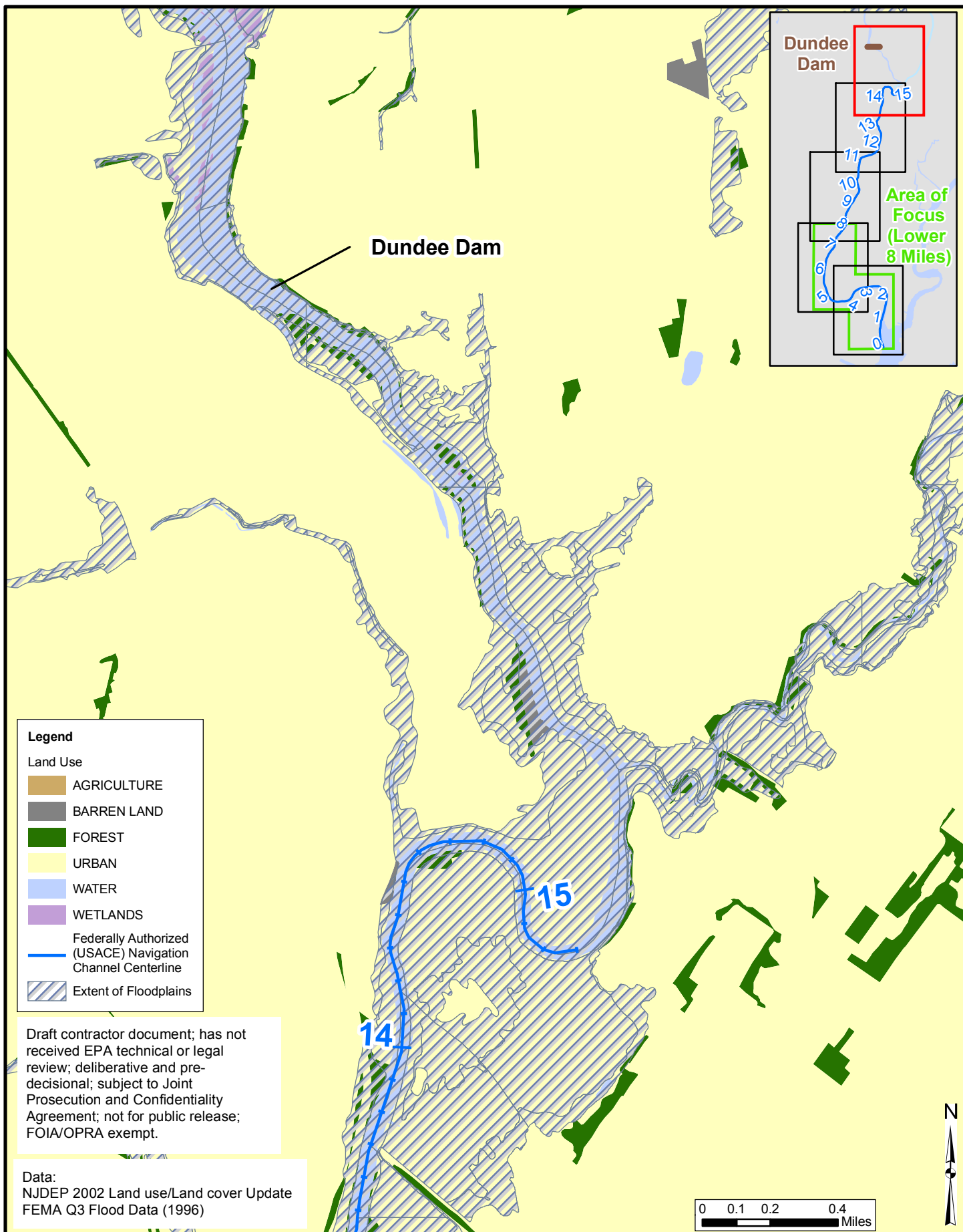
## Current Land Use (RM11 - RM15)

Lower Passaic River Restoration Project

Figure 2-18d

August 2007  
Draft





## Current Land Use (RM14 - Dundee Dam)

Lower Passaic River Restoration Project

Figure 2-18e

August 2007  
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**new jersey**  
**department of transportation**  
**Lower Passaic River Restoration Project**  
**Municipality Plans for Future Use of River**  
**Miles 0 to 8**

**Legend**

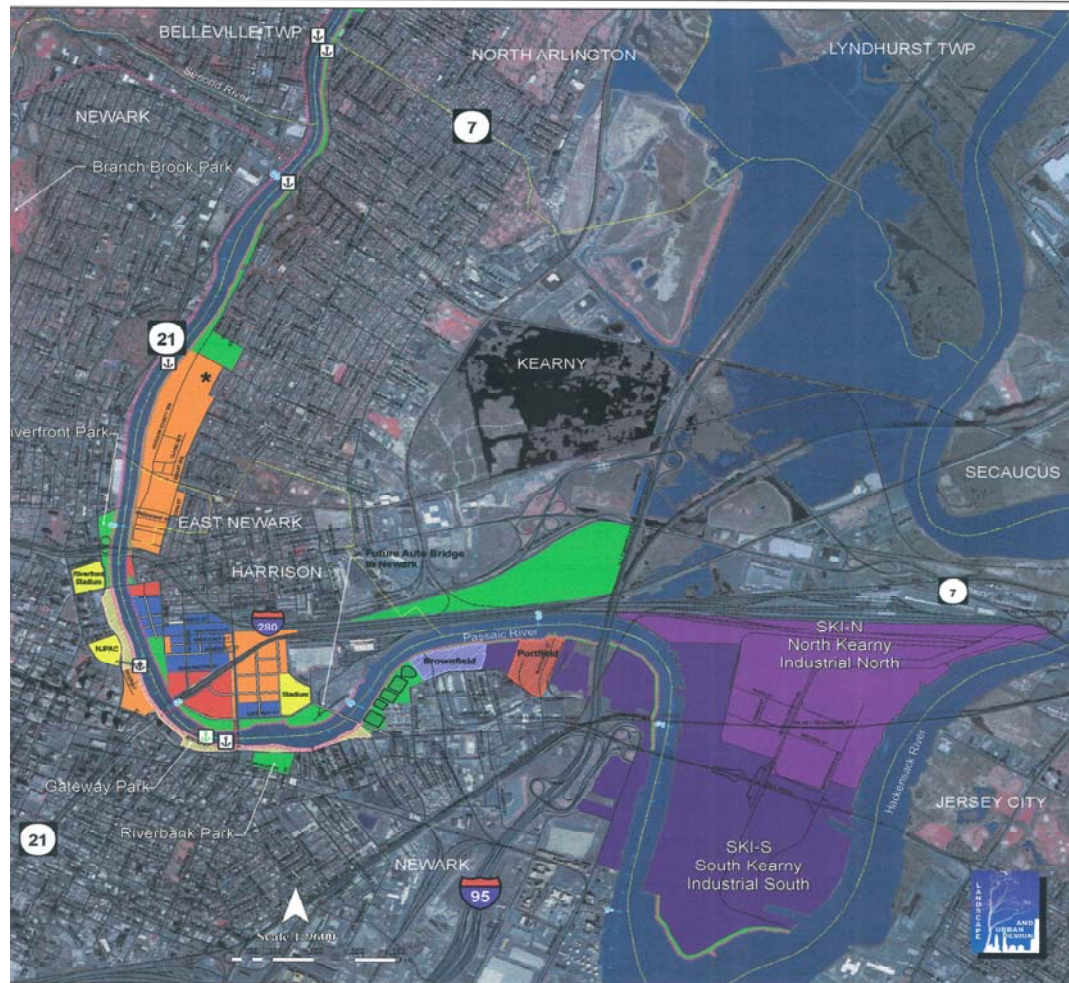
- |   |  |
|---|--|
| Lister Avenue Brownfield Development Area           | Entertainment                                      |
| Blanchard Street/Fairmont Chemical Development Area | Minish Park Boundary                               |
| Boating: Recreation/Commercial (marina, dock, ramp) | Open Space/Recreation                              |
| Bikepath/Walkway                                    | Industrial   |
| Proposed Street                                     | Mixed Use (Residential/Commercial [Retail/Office]) |
| Pedestrian Bridge                                   | Residential  |
| Athletic Fields                                     | Commercial   |

**Notes:**

1. Aerial photograph is 2002 Orthophotography. These files are projected as 1983 New Jersey State Plane Coordinates in feet.

Boating area to include water taxi, tour & educational boats

\* Also includes recreation activities & entertainment destination



**Source of image:** Source Control Early Action Focused Feasibility Study: Lower Passaic River Restoration Project. Prepared by Malcolm Pirnie, Inc., 2007. Appendix F: Navigation Studies. "New Jersey's Position on the Future Navigational Use on the Lower Passaic River, River Miles 0 – 8." Prepared by NJDOT, 2007.

**Note:** Draft contractor document; has not received EPA technical or legal review; deliberative and pre-decisional; subject to Joint Prosecution and Confidentiality Agreement; not for public release; FOIA/OPRA exempt

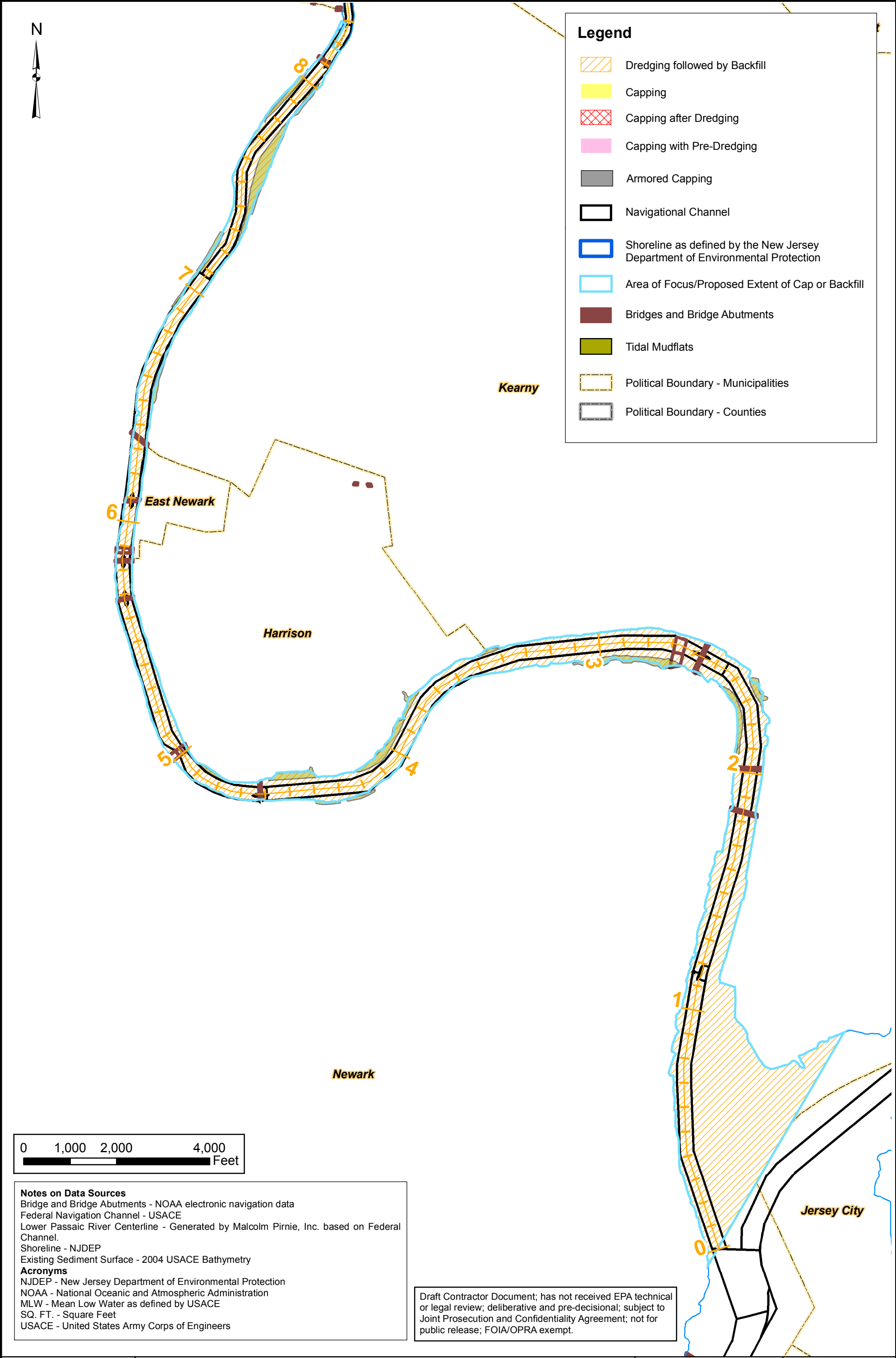


**Municipality Plans for Future Use of  
River Miles 0 to 8**  
Lower Passaic River Restoration Project

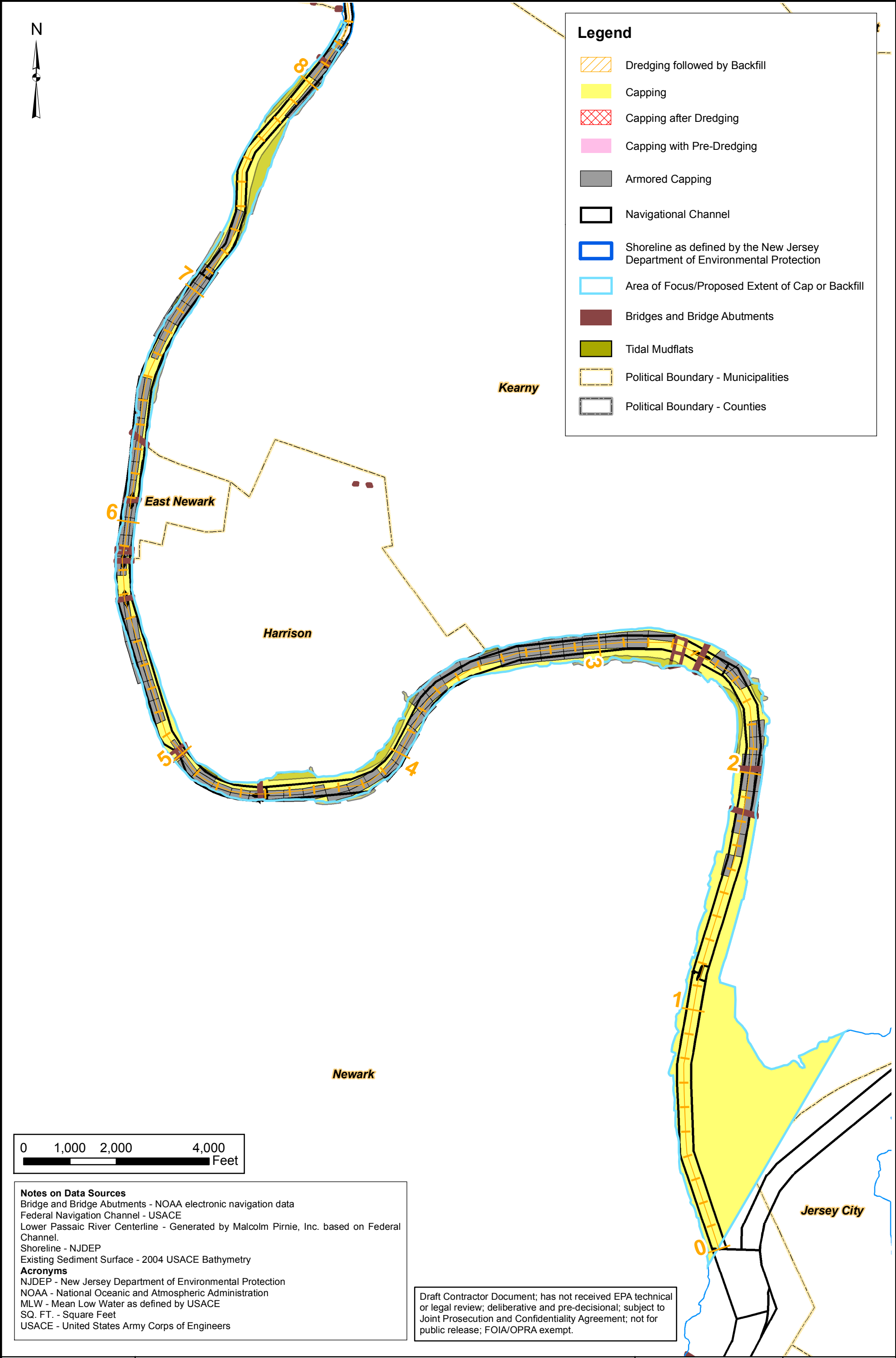
**Figure 2-19**  
August 2007  
Draft



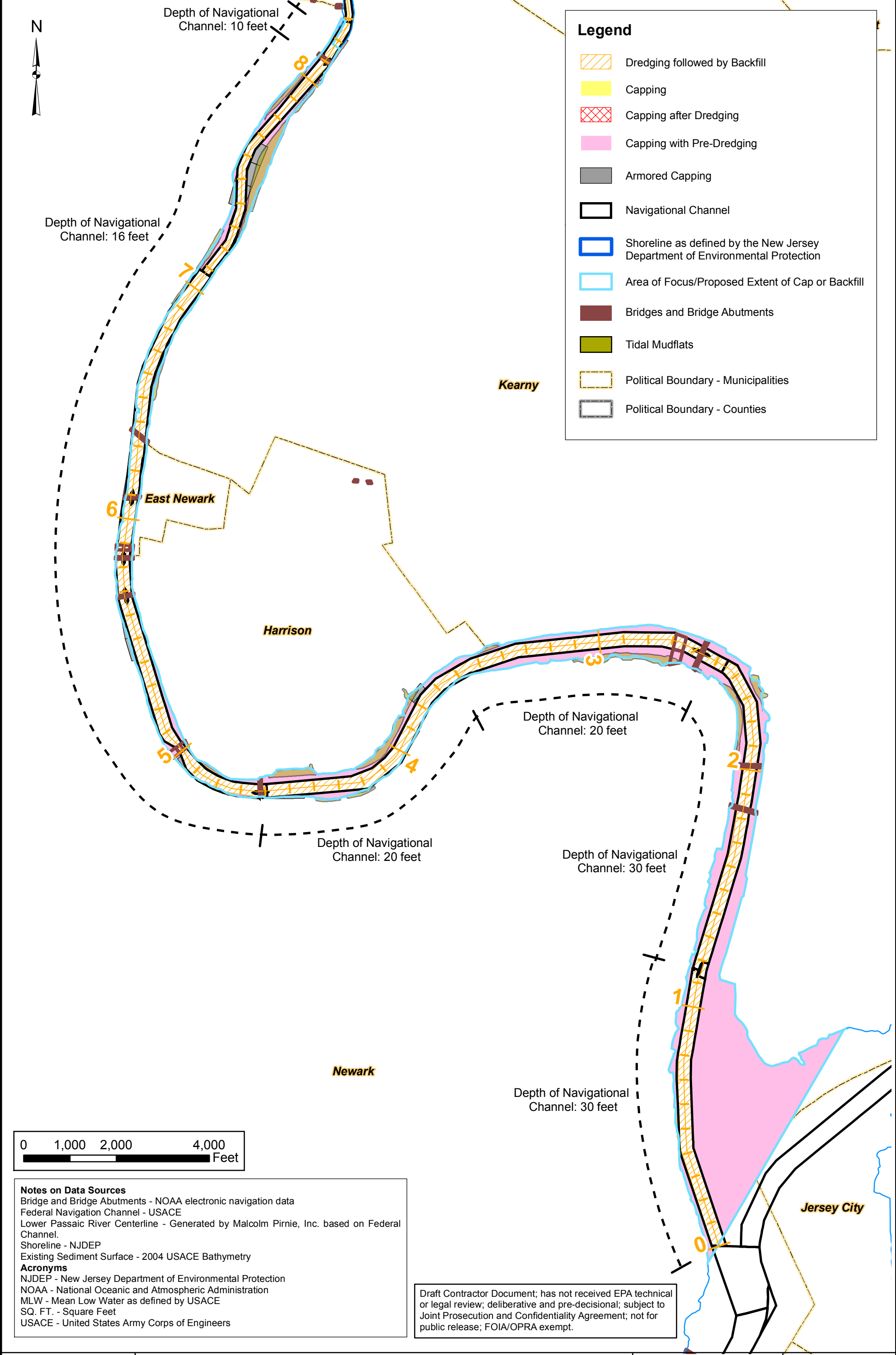
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8/9/2007 -- 11:28:12 AM



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8/9/2007 11:53:41 AM



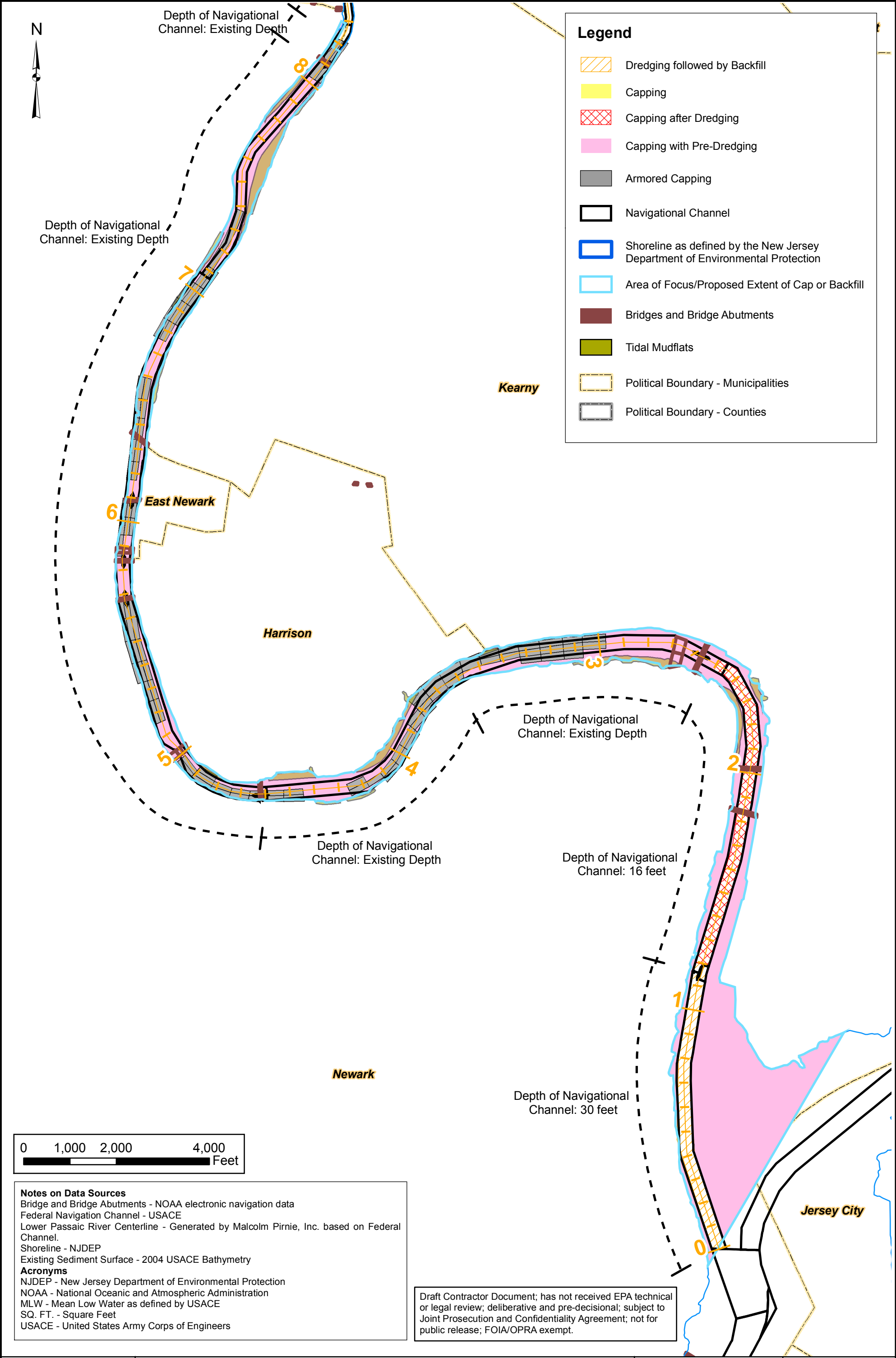
**Alternative 3:**  
**Engineered Capping of Area of Focus Following**  
**Reconstruction of Federally Authorized Navigation Channel**  
*Lower Passaic River Restoration Project*

FIGURE 2-22

August 2007  
**CONFIDENTIAL**



Map Document (S:\Projects\PA\SSA\IC\MapDocuments\NRRB\_Package\_11x17\figures\Alternative4.mxd)  
8/9/2007 -- 2:40:05 PM



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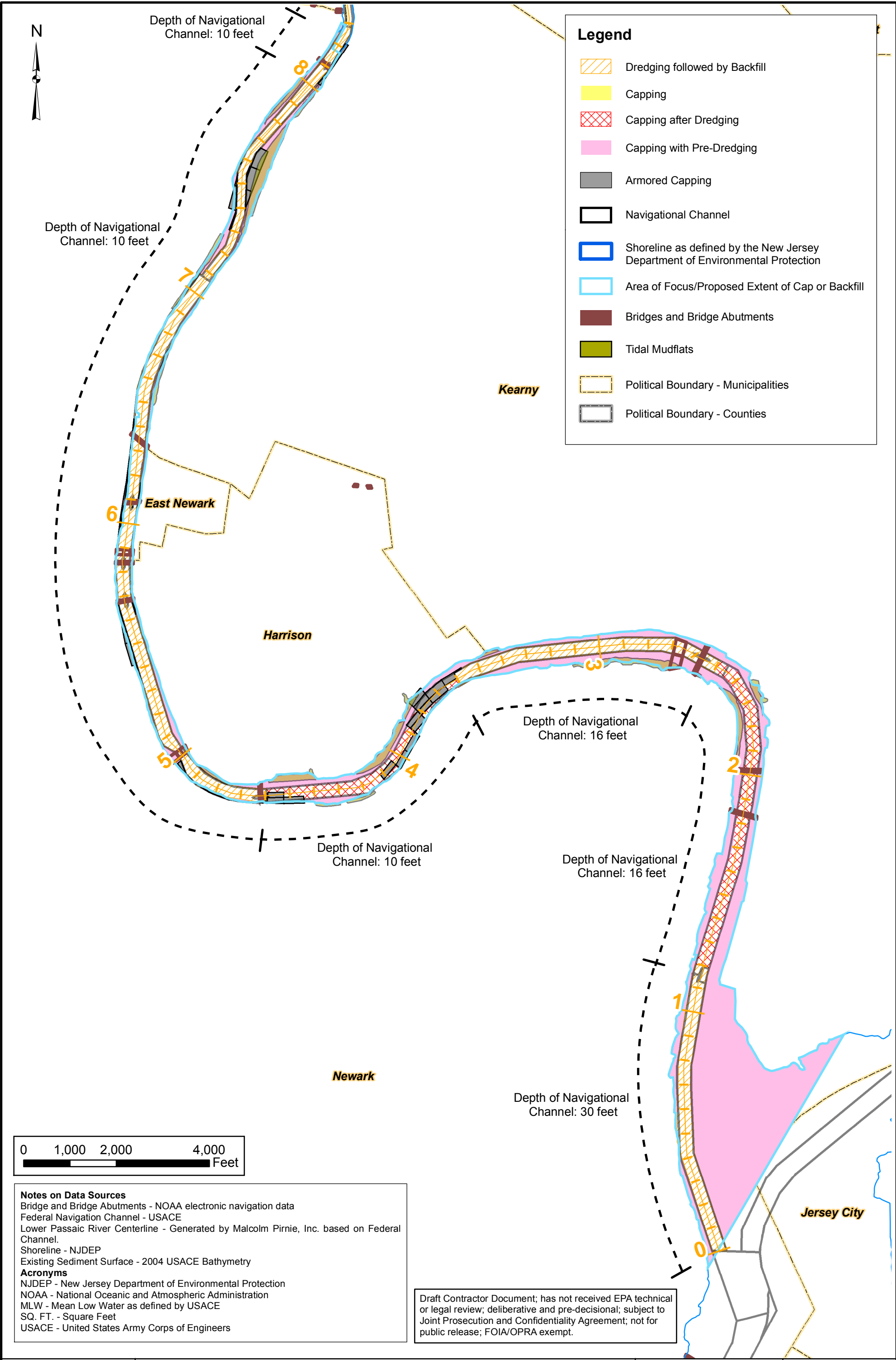
**Alternative 4:**  
**Engineered Capping of Area of Focus Following Construction of Navigation Channel to Accommodate Current Usage**  
*Lower Passaic River Restoration Project*

FIGURE 2-23

August 2007  
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Map Document (S:\Projects\PA\SSA\IC\MapDocuments\4553001-CERCLA\IFFS\_Concept\_Designs\NRRB\_Package\_11x17\figures\Alternative5.mxd)  
8/8/2007 -- 3:15:05 PM



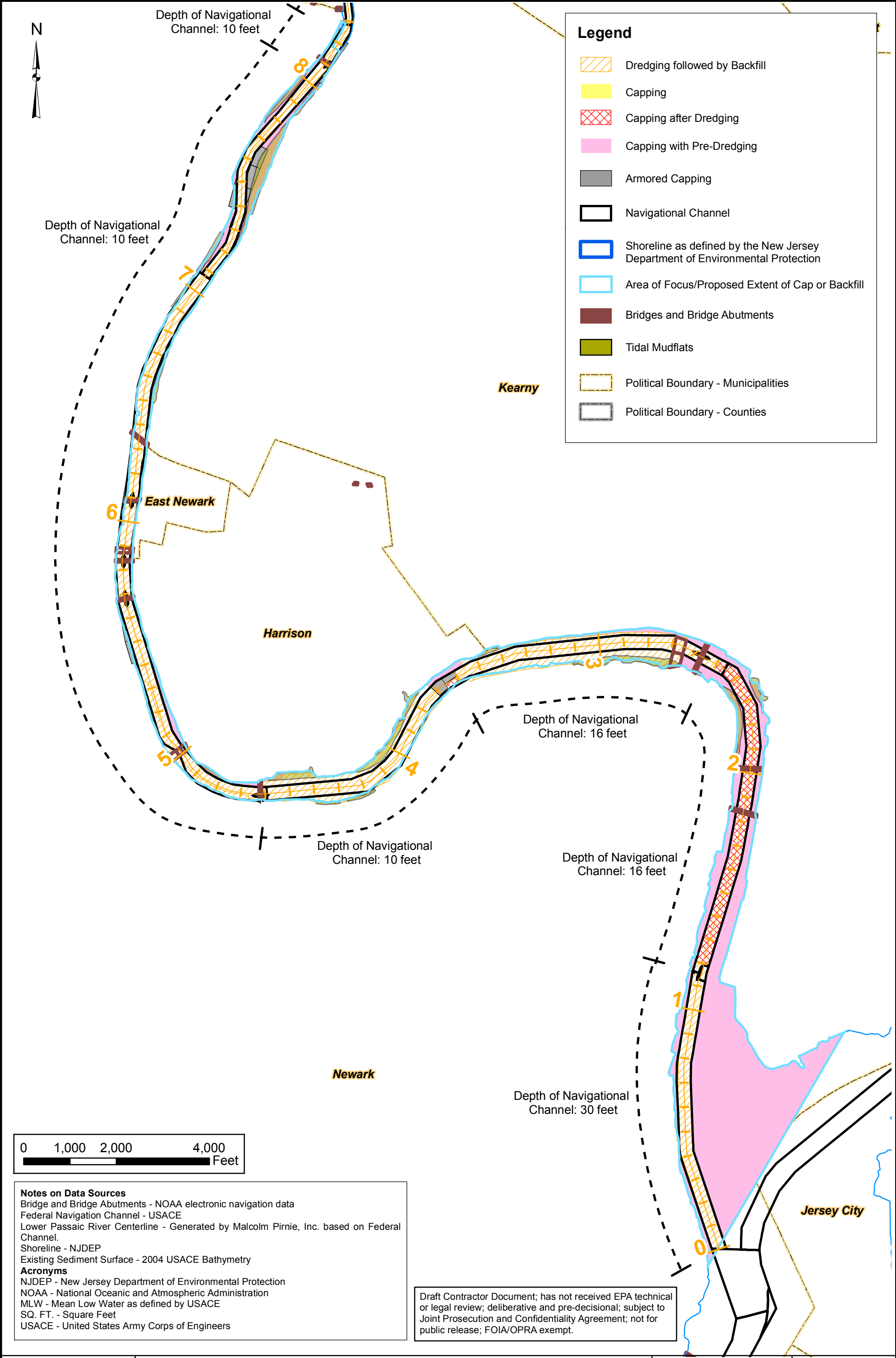
**Alternative 5:  
Engineered Capping of Area of Focus Following  
Construction of Navigation Channel to Accommodate Future Usage**  
*Lower Passaic River Restoration Project*

FIGURE 2-24

August 2007  
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Map Document: (S:\Projects\IPASSA\ICMapDocuments\NRRB\_Package\_11x17\figures\Alternative5.mxd) 8/8/2007 -- 3:15:05 PM



**Alternative 6:**  
**Engineered Capping of Area of Focus Following Construction of**  
**Navigation Channel to Accommodate Future Usage and Removal of Fine-Grained Sediment**  
**from Primary Erosional Zone and Primary Inventory Zone**  
*Lower Passaic River Restoration Project*

FIGURE 2-25

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